

AMERICAN FRUIT GROWER MAGAZINE



April, 1925
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Vol. XLV.

APRIL, 1925.

No. 4.

Winter Injury of Fruit Trees

By U. P. Hedrick

New York Agricultural Experiment Station

Experimenters find that vigorous of service in preventing winter injury vegetative growth in early summer is jury, and starved trees and those

WINTER injury is one of the chief hindrances to fruit growing in North America. No part of the continent where hardy fruits are grown, except in favorable portions of California, is free from the danger of a freeze that will injure the trees. Now and again a loss is suffered which threatens the very existence of even such hardy fruits as the apple and pear. Such was the case in the cold winter of 1918-19, when hundreds of thousands of apple and pear trees were killed in the northeastern part of the country. One of the problems which the fruit grower must face is how to avoid or check winter injury.

The problem can be solved because we often find varieties and orchards wholly or little injured adjoining others with trees wholly or partly killed. What conditions of the trees, of the soil, or of culture account for the differences? If this question could be answered, we might do something to avoid winter injury. Let us review the possibilities.

Influence of Soil on Hardiness

The kind of soil seems to make little difference, provided always it is warm and neither too wet nor too dry. Any fruit subject to winter injury must have a warm, comparatively dry soil to secure the greatest possible hardiness inherent to the fruit. It is only on such soils that trees make a strong, firm, and matured growth conducive to hardiness. Plants on such soils seem to have more and smaller cells in their tissues and possibly a more condensed sap, both of which conditions seem favorable to hardiness.

Amount of Moisture in the Soil

The soil, especially in late fall, must not be too dry. When this occurs, cold winds dry out the trees in the winter and they suffer more easily from cold or possibly from the drying itself. Observations in the great fruit and nursery center in western New York during the past 20 years show that winter injury is often severe, even though the temperature may not go low, in winters following a dry autumn. I believe it is a practice in some western states where winter injury may occur to irrigate late in the fall so that the trees may be abundantly supplied with moisture in the winter. Cold accompanied by dry winds is always more harmful than cold without the wind. Every fruit grower knows that twigs more or less shriveled in winter from lack of water or lack of maturity invariably suffer from winter injury.

Vigorous Growth a Preventive of Winter Injury

The theory is set forth in many texts that vigorous growth makes trees susceptible to winter injury. This theory finds expression in such statements as: "Hardy under neglect; tender under culture." Those who have made a study of winter injury in recent years, however, find that trees are more likely to suffer from cold if the growth is very light than if it is heavy. Under-feeding makes the trees more susceptible than over-feeding.



Peach tree badly injured by winter killing

permitted to bear too much are very susceptible to winter injury. However, very late fall growths are susceptible to winter injury. It is a good practice, then, to stimulate growth early in the season, to stop cultivation in midsummer, and to promote in every other way a vigorous, healthy, but firm, growth of wood.

Cover Crops Prevent Winter Injury

In cold climates cover crops protect tender trees from winter injury. The cover crop itself forms a blanket and also holds a muffer of leaves and snow. Possibly, however, the best effect of the crop is to cause the trees to ripen their wood quickly and thoroughly and to assist in regulating the supply of moisture, for, it seems, as is set forth in the next paragraph, that trees are as hardy when the cover crop is plowed under in the autumn as in the spring.

Fall and Spring Plowing

It used to be a tenet of fruit culture that the orchard should be plowed only in the spring in regions where there is danger of injury from the cold. Thousands of fruit growers have disproved this in the northeastern states where winter injury most often occurs. Trees suffer no more if the land is plowed in the fall than if it is plowed in the spring. True, the practice usually is, or should be, to plow up to the trees, a procedure which may help to prevent winter injury. In this autumn plowing, also, all think they have better results if the land is left unharrowed until spring so that the furrows hold the snow better than otherwise would be the case. Whatever may be the reason, nothing is better proved than that fall plowing is not conducive to winter injury even in fruits so tender as the peach or sweet cherry.

Height of Head in Winter Injury

Low-headed trees are less injured than high-headed trees in winters of severe cold. Probably the reasons are that winds dry out the wood of high-headed trees, making them more susceptible to cold; low-headed trees are possibly more vigorous and therefore less susceptible to cold; but most important, low-headed trees have better protection to the trunk from the sun and therefore suffer less from freezing and thawing.

Windbreaks as a Protection Against Winter Injury

The value of a windbreak depends largely upon several factors. So planted as to form still air or to deflect air currents in cold weather, they probably have some value. The disadvantages, however, usually outweigh the advantages. They are expensive to start, use much land, check atmosphere drainage in frosty springs, and harbor pests. There are few fruit farms, indeed, for which windbreaks are desirable.

Are Trees From Northern Nurseries Hardier Than Those From the South?

I cannot find that any experiments have ever been carried on under conditions such as to answer this question.
(Concluded on page 39)

Editorial Contents

| | |
|---|----|
| Winter Injury of Fruit Trees, by U. P. Hedrick..... | 3 |
| Financing a Young Orchard with Inter-Crops, by F. C. Sears | 4 |
| Developments in the Use of Oil Emulsions, by C. E. Durst... | 4 |
| Blackberry Varieties, by George M. Darrow..... | 5 |
| Successful Grape Growing, by T. J. Talbert..... | 7 |
| Selecting the Right Truck, by F. L. Edman..... | 7 |
| Cropping Between the Tree Rows, by F. W. Allen..... | 8 |
| The Fig Industry of Texas, by R. B. Fairbanks..... | 8 |
| An Experience in Roadside Sales, by Julius W. Chapin..... | 10 |
| Currant Growing Increasing in Importance, by Paul Thayer.. | 10 |
| Raspberry Anthracnose Preventatives, by C. L. Burkholder.. | 16 |
| EDITORIAL | 6 |

Secretary Jardine—The President's Agricultural Commission—Keeping Letters and Records

DEPARTMENTS

| | | | |
|-------------------------------------|----|-----------------------------------|----|
| The Editor's Mail Box..... | 24 | Patterns | 36 |
| With the Co-ops..... | 28 | Better Home Department..... | 38 |
| Markets and Marketing..... | 30 | Beekeeping for Fruit Growers..... | 40 |
| The Orchard Home Department..... | 32 | Small Fruit Culture..... | 42 |
| Chats with Fruit Grower's Wife..... | 34 | Profitable Poultry | 44 |

Financing a Young Orchard With Inter-Crops

By F. C. Sears

Massachusetts Agricultural College

PROBABLY the man was correct who, when asked what was the best way to finance a young orchard during its period of development, said, "Get a government job." But since there are not enough jobs to go round, most of us are still faced with the very serious problem of deciding just how we are going to take care of these expenses, which "run into money" pretty fast if the orchard is of any size, and which hold on for eight or 10 years in the case of an apple orchard, before the trees themselves begin to pay us dividends.

The Welfare of the Orchard Paramount Consideration

The first thing to be said in discussing this problem, and the thing to be kept constantly in mind, is the fact that the orchard itself is our chief consideration and nothing should be put onto the land which will in any way work against the interests of the trees. "True," you say. "Self-evident. Why mention it?" Simply because nine-tenths of us who grow crops in our orchards overlook the point and think more of our potato crop than we do of our trees. I well remember visiting one of the most famous fruit growers that this county has ever produced and being shown a young orchard, just set, in which he was growing corn as a companion crop. But

you had to be told that there was an orchard there, and even then you had to hunt to find the trees. Now, that kind of a companion crop is mighty bad companionship for young trees. Don't do it. Remember that you are building an orchard which ought to last half a century at least, and don't let a six months' crop of potatoes or corn, or even a 15-year crop of filler trees interfere with the best development of the main line of your endeavor—namely, growing the best trees that you and your land are capable of producing.

A Profitable Crop Necessary

The second point to be kept in mind in this discussion of financing the young orchard is the fact that it is of no use to grow crops in our orchard unless they are profitable crops; in fact, it is *worse than useless*. That is a self-evident fact that apparently isn't evident to many of us.

If we can just manage to meet these two requirements of the situation—keep our trees hustling and make money for our companion crop—we have solved this problem. Can we do it? Well, some men have. Let us see.

Possibilities Differ

It ought to be said next that the possibilities in this companion crop question differ widely with varying conditions and in different parts of the country. The man who is keeping stock on the farm and who wants turnips and mangels and various other crops as stock feed has a big advantage. And the man who is reasonably near to good markets can grow many things which the more distant man cannot.

The question of whether the young orchard under consideration is the only orchard on the farm, or is merely an addition to fairly large blocks already fruiting, has an important bearing on the question. In the latter case, crops which require attention during apple picking time should be barred, for no orchard man will leave off picking his Jonathans or McIntosh to dig potatoes.

Furthermore, this question just raised, of a new venture versus an addition to the old orchard, may have a very decided bearing on the urgency of getting something on the land to pay expenses. A small addition might

be handled without any difficulty, where a fairly large venture, coming all at once, would make some returns from the land a very urgent matter.

Essentials of a Good Inter-Crop

It may be worth while next to consider what types of crops are best adapted to young orchards, for there are certain characteristics that are almost imperative, though of course there is a fairly wide variation in the list for different sections.

One of the most desirable characteristics of such a crop is that it may be planted late in the season, because one of the most serious objections to growing such crops in our young orchards is the fact that they interfere with plowing and cultivating the orchard. If we can grow a crop that may be planted in late June or early July and still prove profitable, we have gone a long way towards meeting the objections to such crops.

A second characteristic which most orchard men would probably agree on as being very desirable, if not imperative, is that it be a cultivated crop. It is very rare indeed that one is justified in growing hay or small grains in the young orchard. About the only conditions which would justify them would be in the case of a distant field where the time spent in going back

(Concluded on page 41)



Left—Soybeans as a companion crop in a young pear orchard, an admirable crop for this purpose. Center—Squashes grown as a companion crop in a block of three-year-old peach trees. Note cover crop of buckwheat along tree rows. Right—Potatoes as an inter-crop in a young peach orchard—one of the best crops for this purpose, and in this instance evidently doing no harm to the trees

Developments in the Use of Oil Emulsions

By C. E. Durst

BECAUSE of the failure of lime-sulphur to control San Jose scale successfully, especially in the more southern fruit sections, oil sprays have come into general use in the last few years. In past years it was feared that the oil sprays might have a cumulative injurious effect on the trees, but this fear has been largely, if not entirely, dispelled.

The big question now before growers is whether they should make their own oil emulsions or use manufactured materials. Growers who are not properly equipped for making oil emulsions, or who are not sure of what they are doing, will probably find it best to purchase prepared oil sprays. Large numbers of growers are buying manufactured materials. There can be no question, however, but that many growers are making oil emulsions which are giving satisfactory results. Certain precautions must, however, be taken if satisfactory results are to be obtained.

Because of the comparative newness of oil emulsions, definite information has been lacking on certain points. For this reason some mistakes have been made in making and using oil emulsions, both with respect to manufactured and home-made materials. One point of considerable importance is the kind of formula used.

Formulas

The report of the sub-committee of the American Association of Economic Entomologists, made at Washington during the holidays, is perhaps the

most trustworthy and up-to-date information on the preparation and the use of oil emulsions. According to this report, which was drawn up by a group of entomologists from all parts of the United States and Canada, the original *boiled lubricating oil formula* is still the most satisfactory. This is as follows:

| | | |
|----------------------|---|--------|
| Oil | 1 | gallon |
| Potash fish-oil soap | 1 | pound |
| Water | 1 | gallon |

Of cold-mixed emulsions, three kinds have proved satisfactory under certain conditions, as follows:

| | | |
|-------------------|-----|--------|
| Oil | 1 | gallon |
| Copper sulphate | 1/4 | pound |
| Hydrated lime | 1/4 | pound |
| Water | 1 | gallon |
| Oil | 1 | gallon |
| Calcium caseinate | 2-4 | ounces |
| Water | 1 | gallon |
| Oil | 1 | gallon |
| Iron sulphate | 1/4 | pound |
| Hydrated lime | 1/4 | pound |
| Water | 1 | gallon |

Melander of Washington reported that the "W. S. C." miscible oil had given the best results in that state. This consists of 91 per cent neutral lubricating oil, five per cent potash fish-oil soap (30 per cent moisture) and four per cent crude cresylic acid. The latter two are mixed to form what is called "Cresosap." The Cresosap and oil are stirred without heating to form the miscible oil.

According to the report, boiled and

cold-mixed emulsions are of practically equal value; there is perhaps a slight difference in favor of the boiled. The boiled emulsion is regarded as more stable than the cold-mixed. The cold-mixed emulsion should be made up only as needed.

Grades of Oil

The grade of oil used is important. In early recommendations such terms as Red Engine oil and Paraffine oil were used. These terms mean very little, being merely trade terms of a certain company. Oils sold under these names vary greatly in color, viscosity, and other important characteristics. In judging the merits of oils for making oil emulsions, their viscosity, volatility, and specific gravity should be taken into account. Dealers who are familiar with oils can assist growers in securing information about these matters. The most definite and up-to-date information available on these points is contained in the entomologists' report referred to. According to this report, the oil should come within the following limits:

| |
|--|
| Viscosity, 90-250 seconds at 100 degrees Fahrenheit (Saybolt). |
| Volatility, less than two per cent. |
| Specific gravity, 0.87 to 0.93 at 20 degrees Centigrade. |

These figures, however, represent the extreme limits. For controlling San Jose scale the report advises that

the oil should come within the following specifications:

| |
|---|
| Viscosity, 180-220 seconds at 100 degrees Fahrenheit (Saybolt). |
| Volatility, less than one per cent. |
| Specific gravity, 0.88 to 0.91 at 20 degrees Centigrade. |

The Kind of Water Used Makes a Difference

The kind of water used for making oil emulsions is important. The best kind to use is soft water, but soft water cannot always be obtained, particularly for diluting the stock preparations. The use of a weak (1/2-1/50) Bordeaux with the emulsion permits satisfactory mixing in most hard waters.

Department Bulletin 1217 of the United States Department of Agriculture gives the most recent information on this subject. Besides discussing the best methods of treating hard waters, it recommends the use of "stabilized" oil emulsions with untreated hard water. For stabilizing purposes the addition of casein, milk, skimmed milk powder, gelatine, corn meal, wheat flour, cornstarch, laundry starch, and glue, are recommended; directions and formulas are given for the preparation of stabilized emulsions. Copies of Department Bulletin 1217 may be obtained from the Secretary of Agriculture, Washington, D. C.

Physical Properties

Both boiled and cold-mixed emulsions are very adhesive. Oils of high viscosity are the more adhesive. The

(Concluded on page 27)

Blackberry Varieties

By George M. Darrow
United States Department of Agriculture

MR. DARROW'S article on dewberries in the January issue proved so interesting to readers that we have prevailed upon him to write two more articles on blackberries. The first of these is presented on this page. The next article, which will describe the European varieties of blackberries, will be printed in the May issue.

SINCE the first settlement of America, and doubtless even centuries before, the wild blackberry has been prized by all who roamed the fields and woods. It has flavored many a hunter's and fisherman's lunch, and millions have welcomed the addition of dried and canned wild blackberries to their winter larder. Its flavors appeal to all, its thorns but add to the desire for its fruit, and those who have never had the pleasure of long hikes after blackberries have missed much of the joy of farm and country life.

All who have been "blackberrying" know of certain spots where the largest and sweetest berries are to be found. They remember that some bushes bear small, some large, and some round, some long, some dry, and some juicy berries. While many have thought of transplanting bushes bearing the best fruit to their gardens, a few have done it, and it is to those who observe the differences in wild fruits and who take the pains to mark and transplant the superior forms that we owe the delicious blackberries we now cultivate. Such keen observers are the human agencies in the evolution of our native fruits.

When the first settlers came to this country most of the country east of the Mississippi was covered with forest. Blackberries grew along the streams, lake shores, on ledges, and on the mountain tops wherever the shade was not too dense, but they were not as common as they are now. When the forest was cleared, blackberries had an opportunity to multiply. Species native to the lowlands grew side by side with those from the mountains and those requiring much light grew side by side with those which were able to grow in the shade. Bees carried pollen from flower to flower, crossing the different forms, until today in many sections where the woods have long been cleared away a large percentage of the wild blackberries are hybrids. This process of crossing and recrossing is still continuing and new forms are appearing yearly.

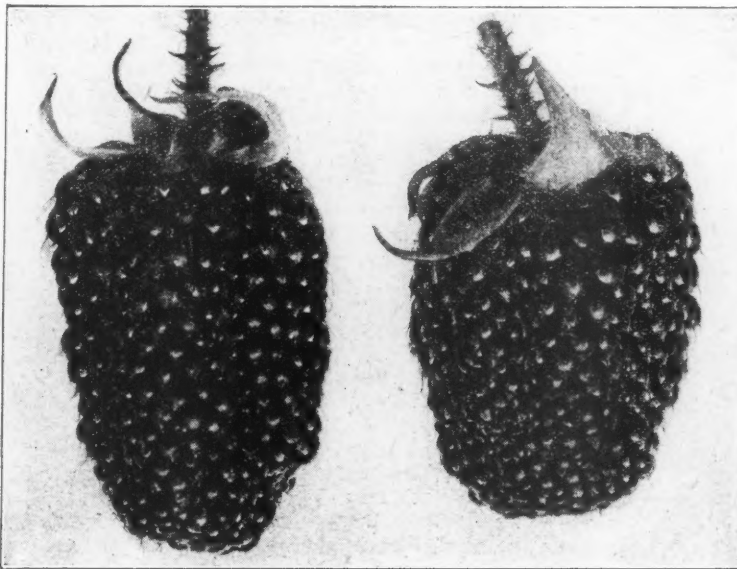
Dr. Brainerd of Vermont, the best authority on the wild blackberries of the Northeast, states that most of our cultivated varieties are hybrids between the original wild forms. Since the first variety was discovered in New Rochelle, a part of New York City, in 1838 by Mr. Lawton, and transplanted to his garden, new forms with especially fine fruit have continually been discovered among these wild hybrids, tested under cultivation and introduced to the trade. Until extensive systematic crossing is carried on by the plant breeder our finest new sorts may still be expected to be brought in from the wild.

Hybrids Between Blackberries and Raspberries

Blackberries belong to the group of the Rose family, called by botanists the genus *Rubus*. The Rose family also includes most of the fruits of the temperate climate, such as the apples, pears, plums, cherries, peaches, quinces, junberries, hawthorns, strawberries, raspberries, and dewberries,

as well as many of our finest flowers, the rose, spirea, etc. Very few true hybrids are known between the groups of these plants, and most of such hybrids are valueless. Hybrids between the raspberry and the rose, and rasp-

cently been somewhat more successful than English breeders. He crossed a wild dewberry from southern Louisiana with the Cardinal purple raspberry and, after many years of persistent work, has originated and dis-



Fruit of the Colombian berry (actual size), said to be the largest blackberry in the world. It has been introduced into the United States, but it has not yet succeeded here. The fruit parts from the receptacle like the raspberry and is of light crimson to wine-red in color (Photo by Wilson Poponoe)

berry and the strawberry have been reported, but have not been authenticated. Certainly none has proved of value. The so-called strawberry-raspberry, sometimes reported as a cross of the strawberry and raspberry, is not a hybrid but a valueless, insipid, low-growing raspberry from China.

Many breeders in America and Europe have made crosses between blackberries and raspberries. For the most part, they have not been successful, the hybrid plants being barren. Though some of these crosses made in England (Mahdi, Kings Acre, and Veitch) have been put in the trade, they are worthless commercially and of little value for home use, for they do not pull off nor pick off readily but crumble or mash.

In this country Prof. H. Ness of the Texas Experiment Station has re-

tributed eight varieties. They are productive and healthy and bear large wine-colored fruits of fine dessert quality. They do not, however, separate from the stem as freely as blackberries, though they tend to crumble far less than the English sorts. They promise to be of considerable value for home use in eastern Texas and perhaps in other parts of the South. At Washington, D. C., they are tender, however, and bear practically no fruit. No other blackberry-raspberry hybrids made in this country have proved to be of any value.

Pink, Lavender, Purple and White Blackberries

Blackberry is the name we give to this fruit because it is commonly black. Though most varieties are black, nature has given us a variety of colors.

White or straw colored blackberries (Iceberg and Crystal White) are quite common in gardens. A pink blackberry of high dessert quality, the Coral Pink, is in the trade in Alabama, and others were formerly advertised having lavender and purple colored fruits. In South America, red-fruited blackberries are common and, in future years, some of these may be of value in the United States. Commercially, however, only black-fruited sorts are at present important, the others being chiefly of interest for home use.

How Do Blackberries Differ from Raspberries?

Cultivated raspberries also may be black, purple, red, and straw or golden colored. Raspberries, then, do not differ from blackberries in color.

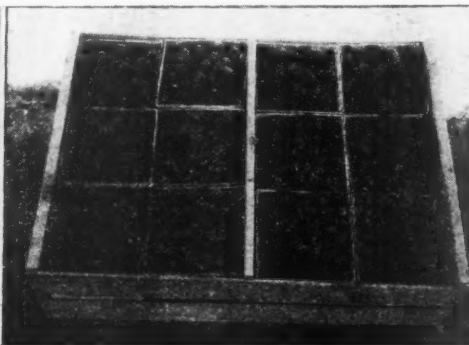
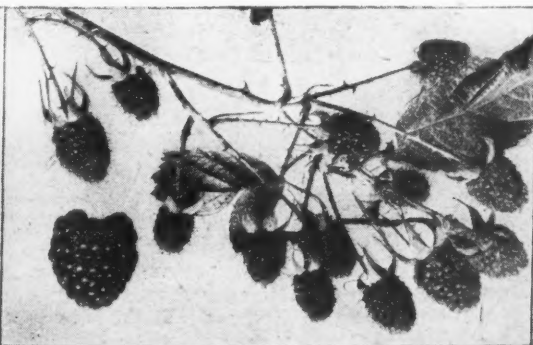
In the United States and Canada the name raspberry is given to those bearing cup-shaped fruits which pull off the stem, leaving the receptacle still attached to the plant. Those having cylindrical or globose fruits with a core at the center are called blackberries or dewberries. The leaves, canes, and thorns of our raspberries are also different from those of the blackberries. In South America, however, the cultivated black raspberry has a fruit with a core like the blackberry. On the other hand, some of their wild blackberries (and they are the largest known in the world, with berries as large as a small hen's egg) pull off and are cup-shaped like the raspberry but still have the foliage, canes, and thorns of blackberries. In Asia, other intermediate forms occur which will puzzle anyone as to whether they should be called blackberries or raspberries. If varieties of such forms are ever cultivated, new marks of distinction between these fruits must be adopted or new names given them.

How Blackberries Differ from Dewberries

Those which have trailing canes and which bear blackberry-like fruit are commonly called "trailing blackberries" or "dewberries." These names are not very distinctive, for in the wild thousands of natural hybrids between the truly trailing and the erect growing forms occur which show every gradation between trailing, semi-trailing, and erect forms. Cultivated varieties also range from erect-caned sorts to those with trailing canes. A trailing blackberry is simply one having so little woody fiber in its canes that it cannot stand erect. A semi-trailing form has more woody fiber and an erect one still more. Another difference between the common dewberries and blackberries worth noting is that the dewberries have the largest seeds, semi-trailing forms the next largest, and the erect growing blackberries the smallest.

Recent investigations indicate that the leading varieties of the cultivated dewberries may be hybrids between the true wild trailing species and the erect growing blackberries. The Mammoth of the Pacific Coast is quite certainly such a hybrid and is trailing. Semi-trailing sorts, such as Rathbun,

(Concluded on page 14)



Left—Mammoth blackberry plant trained to a two-wire trellis in California. The fruit of this variety and of the Cory (practically a thornless Mammoth) is the largest of all blackberries of the United States. Center—A fruit cluster, grown in Ecuador, of the Andesberry of South America. The fruit separates from the stem like the blackberry and is light red to deep maroon in color. Right—Logan blackberries on the left and Mammoth on the right

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Secretary Jardine

INAUGURATION is over and the reorganized administration has settled down to work. Fruit growers and farmers will await with great interest the forthcoming developments. They will be interested particularly in the work of the Department of Agriculture.

W. M. Jardine, the new Secretary, enters the work with a good record. He has been president of the Kansas Agricultural College. He has been serving on President Coolidge's Agricultural Commission. He seems to have the faculty of getting along well with people. He appears to be quite acceptable to the men in the Department of Agriculture. There is little doubt but that as an executive in the Department of Agriculture he will prove a success.

There are, however, some larger problems involved. Mr. Jardine, as Secretary of Agriculture, faces a situation which will be new to him. He will sit in the cabinet during the coming four years and will there represent agriculture. His success in handling this phase of his work will determine very largely whether or not policies will be adopted which will insure agriculture an even break in the distribution of the national income. Food producers everywhere will watch with great interest this part of Secretary Jardine's work.

Secretary Jardine opposed the McNary-Haugen bill, which was promoted by several agricultural organizations and opposed by others. In our opinion this measure was unsound, and therefore we do not believe Mr. Jardine's opposition to it is a point against him.

Mr. Jardine has taken an active hand in promoting government co-operation in marketing, as recommended by the Agricultural Commission. We believe a sane method of government co-operation, which would not savor of domination and which would keep control of agricultural affairs strictly in the Department of Agriculture, would be desirable. There is, however, a lot of opposition to legislation of this kind.

Mr. Jardine is apparently approved by Secretary Hoover. This association does not meet with general approval among the farming interests because of the feeling of many leaders

that Secretary Hoover is exercising an influence in agricultural affairs that is not a good thing for agriculture.

Secretary Jardine has a real job on his hands. For the good of agriculture and of the public at large and of himself, we hope he will adopt an aggressive, constructive program that will keep agricultural affairs within the Department of Agriculture and which will insure agriculture an even break with other lines of industry.

The President's Agricultural Commission

PRESIDENT Coolidge's Agricultural Commission worked for several months and among other things recommended legislation providing for government co-operation in the development of co-operative marketing. There was considerable shifting around in Congress of bills which were intended to carry out the recommendations of the commission, due probably to political manipulation of one kind or another. As a result, the legislation failed to pass.

This, however, does not settle the question, and no doubt the matter will again come to the front. One group favors government co-operation in the development of co-operative marketing. Another group is very much against it. The first group feels that government co-operation of the right kind will help to develop the movement more rapidly and more soundly. The latter group takes the position that co-operatives should be allowed to work out their own salvation and should be kept entirely free from government interference.

The Editor, as a former county agent and as marketing director in a state farm bureau organization, has seen considerable of the development of co-operative marketing and has assisted in organizing a number of co-operatives, both large and small. He has also had considerable opportunity to study and observe co-operative marketing in many parts of the country. This experience and observation lead us to believe that the biggest obstacle to the development of co-operative marketing is the farmers themselves. The reason why so many farmers are not supporting the movement is because they have no confidence in the way it is being conducted. Without larger support, the movement will never achieve real success. If farmers had more confidence in the situation, there is little doubt but that the movement would receive the support it needs for success. From a business standpoint, there is every reason why a grower should support co-operative marketing, but when one considers the many things which have been done in the name of co-operative marketing, it is possible to understand why the movement has not received more general support.

The movement certainly needs some feature added to it which will create a greater respect for it in the minds of growers and which will discourage the opposition to co-operative marketing. We know of no agency besides the government which is capable of rendering this service. We believe that a sane method of government support of co-operative marketing that would not partake of domination or dictation would be a good thing for co-operative marketing. Such a method of co-operation would, in our opinion, create a new confidence among growers in the movement, and it would have a marked effect in discouraging the activities of interests which are doing everything possible to hinder and prevent the development of co-operative marketing.

We believe it is very important, however, that such service should be rendered through the Department of Agriculture. If the department does not have a proper and sufficient personnel now, it should be asked to get it. It will be as easy to add such personnel to the

Department of Agriculture as to other departments. The department has always given fair and efficient service in the past and we believe it can be depended upon to administer support to co-operative marketing in a thoroughly satisfactory manner. We know of no group of men in which we would place greater trust than in those connected with the Department of Agriculture and the state colleges and experiment stations. These men are seekers of the truth, and they have an inborn respect for justice and efficiency.

Finally, we should bear in mind that the present administration seems thoroughly committed to co-operative marketing and desires to help promote the movement in every legitimate way. It is fortunate for agriculture that such a spirit prevails, and we should by all means take the fullest advantage of it. If some of the agricultural factions continue to obstruct the movement, it is possible the administration will become discouraged and lose its interest in agriculture. We sincerely hope the various groups will forget their personal ambitions and that they will unite in a constructive program which will serve the growers' welfare.

Keeping Letters and Records

"MARY, have you seen that letter I got last year from a company down in New York? It gave some good quotations on spray material."

"No, John, I haven't seen it lately. Did you look on the clock shelf? Maybe it is in the dresser drawer or in the pantry."

"No, it isn't in any of those places. I have looked high and low and I can't find it. I'm sorry, too, because I would like to get in touch with that company and get some of their material this year."

Such conversations as these may appear commonplace, but they occur in many of our farm homes,—and in city homes, too, for that matter. Such situations could easily be avoided.

Many of our readers, we are sure, have an up-to-date bookkeeping and filing system. Others do not. They could have one with little trouble, and they would thrive much better as a result.

If you do not already have a filing system, the best time to start one is now, at the beginning of the growing season. The best thing to do is to purchase a regular filing cabinet, one section of which is equipped with small drawers for card indexes. In such a file you can easily file away letters by alphabet or by subject. A combination plan often works to advantage.

If you want a more modest outfit, you can use the small letter files equipped with alphabet for filing away letters.

Card indexes are extremely convenient. Short directions for controlling different insects and diseases, for instance, can be placed on cards and filed by subject. Names and addresses of manufacturing companies can be filed away by subject. Such addresses are mighty handy when you are planning your purchases and may save you a lot of money.

Agricultural bulletins can be filed away rather nicely by states, accompanied by a card index arranged by subject. However, for quick work, it is usually better to file away the bulletins by subject. Filing boxes are very convenient for filing agricultural bulletins.

Why not begin a filing system now, if you have not already done so? It will save you time, worry, and money, and it will help you to secure better efficiency in your business.

THE EDITOR will talk over Sears-Robuck Radio Station, WLS, March 31 and April 3, at about eight p. m. Let's be sociable. Why not listen in and get acquainted with the Editor?

Successful Grape Growing

By T. J. Talbert

University of Missouri

GRAPe growing as a commercial industry in southwest Missouri has grown up in the past four or five years. The estimated acreage at present is between 7000 and 10,000. In this short time many growers with no previous experience have made the business a success. One of the best examples of how a grower has succeeded is that of D. A. Cummings of Fairview, Newton County, Mo.

Mrs. Mary S. Swindle of Fairview, an enthusiastic promoter of better fruit growing, describes this vineyard and its development in an interesting manner. According to Mrs. Swindle, the farmer is the greatest sufferer under the adverse conditions following the World War. She finds that it is very difficult for him to obtain adequate returns from the growing of live stock and the production of the ordinary grain crops. A change in the interests and crops produced by the farmers has therefore been brought about. Mrs. Swindle continues as follows:

Grapes and Berries Afford Quick Returns

"Largely at the suggestion of the University of Missouri College of Agriculture and more as a means of self-defense in meeting the demands for a larger farm income than can be realized from wheat, oats, and corn, many farmers are now giving considerable attention to fruit growing, especially grapes and berries, as these afford quick returns.

"In July, 1924, a party of representatives of the Missouri State Horticultural Society

made a tour of several of the southwestern counties of the state. Among others we mention the names of Patterson Bain, Jr., Secretary of the Missouri State Horticultural Society; F. W. Faurot, Director Missouri Fruit Experiment Station, Mountain Grove; D. E. Eicher, Horticultural Agent, Frisco Railroad Company; T. J. Talbert, Head, Department of Horticulture, University of Missouri College of Agriculture; Otis Wade, Extension Entomologist, University of

Missouri College of Agriculture; A. P. Boles, Extension Horticulturist, University of Missouri College of Agriculture; J. J. Hazen, Manager, Neosho Nurseries Company; T. H. Jones, grape grower, Neosho, Mo.; Mr. and Mrs. Daniel C. Rodgers, Marketing Bureau, Jefferson City, Mo.; Mr. Flannery, Agricultural Agent, M. & N. A. Railroad; E. A. Logan, Crop Estimates Division, United States Bureau of Agricultural Economics, Columbia, Mo.; Mr. and Mrs. Byron Coleman, orchard-

ists, Marionville, Mo.; Thomas E. Oliver, County Agent, Newton County, Mo.; James Lawrence, County Agent, Miami, Okla.; and A. Keeline, a grape specialist from Iowa.

Route of Tour Changed

"This touring party was joined at Stark City by C. J. Marrs, Mayor of Fairview, Col. Al. Hudson, and other enterprising citizens, who induced the party to change the route they had mapped for their itinerary in order to visit the vineyards of D. A. Cummings at Fairview.

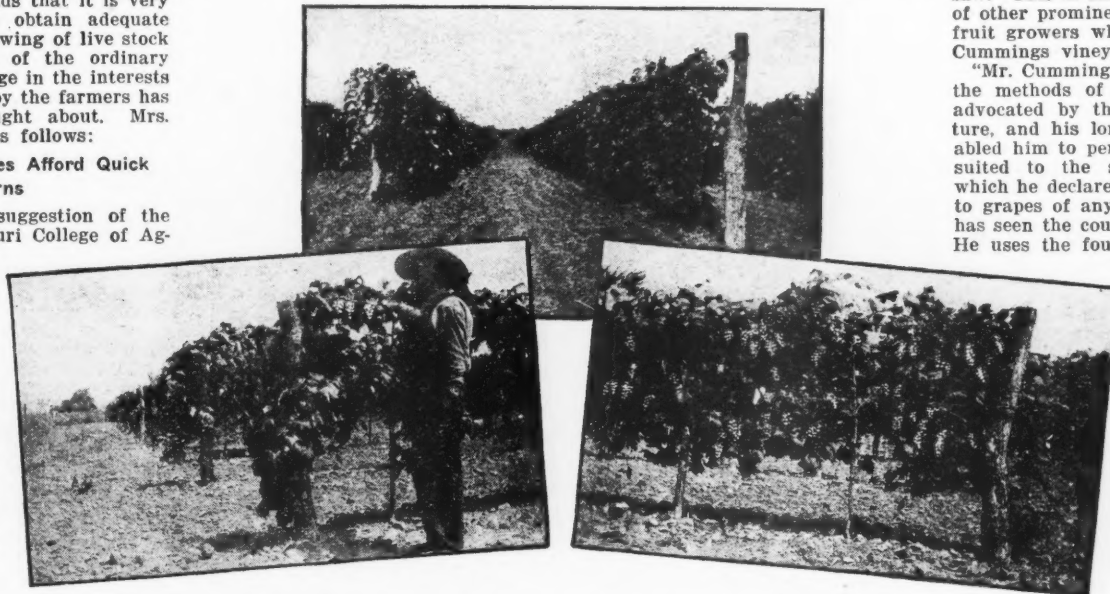
"These people unhesitatingly pronounced this two-year-old vineyard of Concord grapes the finest they ever saw. This is the verdict of a number of other prominent horticulturists and fruit growers who have inspected the Cummings vineyards.

"Mr. Cummings is a close student of the methods of training and culture advocated by the College of Agriculture, and his long experience has enabled him to perfect the methods best suited to the soils of this section, which he declares are the best adapted to grapes of any he ever saw, and he has seen the country as far as Alaska. He uses the four-arm Kniffen system

of training, which is fully explained in the bulletins furnished by the Missouri Agricultural Experiment Station.

"In his new two- and one-half-acre vineyard, fruiting for the first time this season, Mr. Cummings has achieved almost absolute perfection; although in his extreme modesty he claims that he sold

(Concluded on page 23)



Above—End view of D. A. Cummings' vineyard, showing the method of culture practiced. Left—Mr. Cummings and his three-year-old vineyard at Fairview, Mo., August, 1924. Right—A close-up view of a three-year-old vine, August, 1924

Selecting the Right Truck

By F. L. Edman

SPEEDY, dependable transportation is today a recognized essential in the fruit growing industry. This is evidenced in the widespread acceptance of the motor truck as a logical part of the equipment. Experience has proved that in many cases trips to market and other hauling work can be accomplished in one-fifth to one-seventh the time required by teams. Furthermore, more distant markets can be reached than was formerly the case. The time thus saved for other productive work totals hundreds of hours a year, to say nothing of the increased earnings made possible by reaching the best paying markets.

The ability of the motor truck, however, to deliver the utmost in economical, money-earning service depends largely on the accuracy with which it fits the specific requirements of the owner. A motor truck should have sufficient power and strength for the service demanded of it, yet be capable of maintaining that economy in operation which is possible only for the unit that is not excessively overpowered or over-sized.

Use a Truck of the Right Size

The attempt to make a 2000-pound truck do 4000-pound hauling necessarily involves overloading. This practice, although frequently producing no immediate ill effects, nevertheless takes its toll in decreased truck life and makes the ultimate cost of transportation higher than it should be.

On the other hand, the use of a 4000-pound truck for 2000-pound work means that the owner is paying for power and sturdiness which his service does not demand and for which he has no actual need. This involves a greater initial investment, increased cost of operation, and added cost of replacements, which represent a con-

siderable item in the course of a year. While it is impossible to give an intelligent estimate as to the exact difference in cost of operating 2000 and 4000-pound trucks, every experienced truck owner well knows that the saving is worth while, if it can be accomplished without sacrificing the service-life of the truck.

Among the other factors which must be thought of in selecting the right sized truck is the matter of speed, for fruit is a perishable product and often must be transported to market with

the least possible delay. Merely obtaining the utmost in rated road speed is not, however, the primary object. Speed should be considered, as are the various other factors, with reference to its adaptability to the buyer's requirements, based on specific conditions. No hard and fast rules can be given.

Speed Trucks for Distant Markets

Where markets are 25 to 50 miles distant, and the roads are hard-surfaced so that a speed of 30 to 35 miles

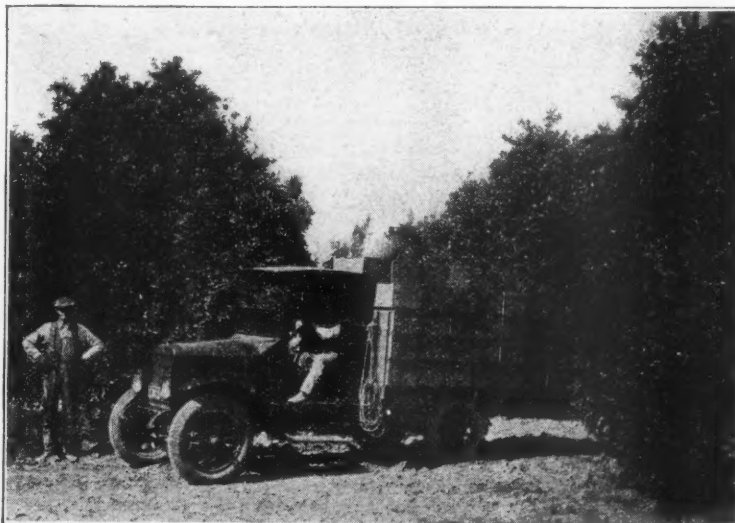
an hour can be maintained, the speed truck of 1000, 1500, or 2000 pounds capacity is usually a most satisfactory unit of transportation. Although there may be times when a larger truck could advantageously be used, what the speed truck lacks in carrying capacity under such circumstances can be more than made up by ability to make more trips.

The 1000 and 1500-pound trucks are extensively used by growers living near the cities and towns in which their principal markets are located and which good roads make readily accessible. They are particularly adapted to the transportation of berries and similar fruit where the grower sells direct to retailers and consumers. These trucks provide speed combined with economy of operation and maintenance. They also make a strong appeal on the basis of the smaller initial investment involved. These lighter vehicles can be profitably used under the conditions described where there are no considerations other than marketing of products which might dictate the wisdom of trucks of greater capacities.

The subject of highways must be given careful thought. If the roads are such as to make a fair speed impossible, it may be a matter of economy to choose a vehicle with a carrying capacity of 3000 to 4000 pounds, as a truck of this size would be able to make practically the same speed over exceedingly bad roads as the lighter vehicle and would have the added advantage of greater tonnage.

Furthermore, if the distance to the best markets is such that more than one trip a day is impracticable, the larger-sized truck may be profitably used, granting, of course, that daily

(Concluded on page 18)



Ready for the haul to market

Cropping Between the Tree Rows

By F. W. Allen
University of California

FOR THE man who can afford to grow his young orchard under a system of cultivation and cover crops, and who can wait five, six, or seven years before he receives any income, such a method of orchard management has much to recommend it. However, the average fruit grower with a family to support cannot well wait through this long period of unproductive years. There must be some income each year or he must give up the idea of raising fruit.

Numerous growers have amply demonstrated that very good returns can be secured the same season that the trees are set. Intercrops have enabled them to make a very good living while the orchard is coming into bearing. Before adopting such a plan, however, consideration should be given to several important factors.

The Trees Are the Main Crop

First, it should be clearly borne in mind that when an orchard is planted the trees are the main crop. In planting anything else on the land, it is really a system of double-cropping. An important question, therefore, for the orchardist to ask himself is, "Is the soil sufficiently fertile and does it contain sufficient moisture to grow two crops?"

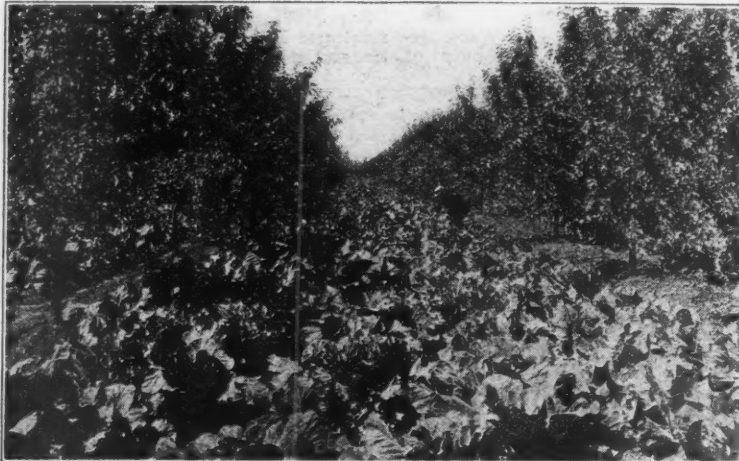
As it will be sometime before the young tree roots range very far for food material, it might seem that during the first few years the trees could be disregarded. This may seem true; however, the time is coming when the root systems will meet and interlock between the rows, and it is then that they may need all the plant food which the soil previously possessed. Even on the best of land serious mistakes can be made if no effort is put forth to return the fertility removed by the intercrop. Manure should be applied annually or else some portion of the crop returned to the land. In most fruit sections of the West, where little rain falls during the growing season, the available water supply is even of greater importance than soil fertility. There must be sufficient moisture in

the soil or the intercrop will rob the young trees. With a lack of summer rain, an abundance of irrigation water is a necessity.

Plant Crops in Good Demand

Possessing good soil and an adequate water supply, the next item of impor-

should have some cultivation. Hence the growing of some cultivated crop is to be recommended, provided cultivation is not kept up too late in the season. In growing a crop which demands good tillage in order to secure normal returns, the orchard may be given better care than it would other-



Market returns in sight from cauliflower

tance for the grower to consider is the demand for the crop after it is produced. It must be one for which there is a good cash price upon the market or else one which can be utilized on the place in connection with some form of live stock.

Intercrops may be divided into annual and perennial crops, cultivated and grain or hay crops, and small fruits. While alfalfa is becoming very popular in bearing orchards in the Northwest, it is still generally considered advisable that young trees

wise receive, and thus the trees may actually be benefited by the practice.

For the same reason that cultivated crops are to be recommended, small grain crops should be discriminated against. They allow for little or no cultivation and compete for plant food and moisture at a time when they are most needed by the young tree.

Vegetables Are Good Intercrops

Where one is located in a truck growing section or near a large market where there is a good demand for

vegetables, such crops as potatoes, tomatoes, cabbage, spinach, lettuce, cucumbers, squash, melons, onions, sweet corn, etc., will prove profitable.

The potato is a staple crop which can profitably be grown in either a large or small orchard. In California this crop is quite largely grown as an intercrop in the San Fernando valley for the Los Angeles market. One hundred sacks are often produced per acre, and as the crop is ready for the market in the early spring months, good returns are received. In the majority of states potatoes are a fall crop, and in case this crop is grown, care may be necessary in late cultivation and in the digging of the crop in order to keep the trees from growing too late in the season and thus subjecting them to severe winter injury.

Tomatoes Grown Extensively

South of San Francisco in the Santa Clara valley are found some 5000 acres of tomatoes, the majority of which are grown as an intercrop between the tree rows. Perhaps seven to eight tons per acre is a good average yield. These go to the local canneries at a price of from \$12 to \$16 per ton. A crop usually preceding the above, and also in demand both by the cannery and local markets, is spinach. This crop is ready for harvesting between the middle of March and mid-May. Six tons may easily be produced from an acre of ground, which is then planted to tomatoes. Spinach does not make a great drain on the soil for plant food, and being ready for market early in the season, may be grown under conditions where the moisture supply of the soil later on would not be sufficient for an intercrop.

Onions are another early crop which may be produced with a somewhat limited water supply. These are largely grown in California south of Sacramento, along the Sacramento river, and are shipped by boat to the large markets of the state.

Melons, cucumbers, and vine crops

(Concluded on page 37)

The Fig Industry of Texas

By R. B. Fairbanks

THE FIG industry in south Texas has taken on new life and is thriving despite the harm that has been done by unscrupulous promoters. Men formerly engaged in selling oil stock are said to be selling fig lands. Of course, these promoters always do any industry incalculable harm, but the fig industry is succeeding despite these pests. The acreage is being increased rapidly at present. It is a good proposition, but the advice of one who has had much experience along this line is to steer clear of the questionable promoters as one would the devil himself.

Ten years ago there were 10 times as many acres planted to figs in Harris, Galveston, and Brevoria counties in south Texas as now. During

that time, however, there was an over-production. Many plantings were made by non-residents or by those who lived too far away from preserving plants to market the fruit economically. Then, too, thousands of trees on sandy land were killed out by nematodes. The price of fruit back in that time was about three cents per pound as compared with six and seven cents now.

Growers Receive Six to Seven Cents Per Pound

At present the preserving plants are doing a good business and paying for

fruit at six and seven cents per pound. Large plantings are being made and there may be an over-production again, but the chances are against this because the market for these preserved figs is increasing rapidly. Therefore, fig growers in south Texas as a class are optimistic about the future.

Many of the contracts that the preserving plants have with growers expire during the next year or two. There is much agitation going on now for the formation of a big, effective, marketing association. It is hoped by this method the present price of six to seven cents per pound may be main-

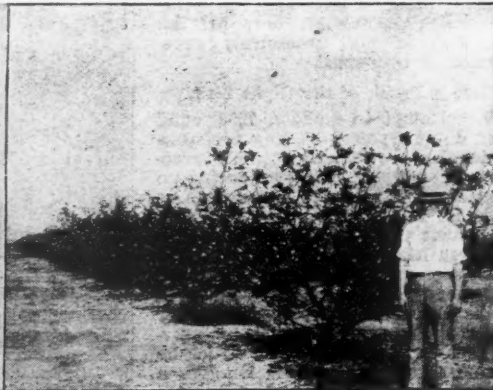
tained. The association will, of course, grade the figs and guarantee the grade to the preserving plants.

Nematodes are bad in sandy soil but do little or no damage in the heavy or buckshot land. The grower now knows that he must avoid planting in sandy land. This is a point that everyone going into this business should have definitely in mind.

How the Trees Are Set

To set the crop, the ground is prepared by thorough breaking and harrowing and draining. The trees are set 16½ feet apart each way, which gives 160 trees per acre. After setting, they must have intensive, but shallow and level cultivation. The roots are

(Concluded on page 20)



Left—In shaping young fig trees, heavy pruning and severe heading back are practiced. Center—Fig tree several years old, showing type of tree sought for. Right—A fig orchard in bearing (Photos courtesy U. S. Dept. of Agr.)



Make the Day Longer

There is a full twenty-four hours to a working day in the fruit orchards, if need be.

During busiest seasons, Fordsons can be used night and day so that plowing, cultivating and spraying be done at just the right time.

Any Ford dealer will be glad to show you how Fordson power can be harnessed for hauling, discing, water pumping, or scores of other tasks which mean profits when they are done right.

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There's time to go through the orchard as often as necessary.



Any operation for better orchard care finds the Fordson ready.



Pumping for irrigation is often an important Fordson task.

See the Nearest Authorized Ford Dealer

An Experience in Roadside Sales

By Julius W. Chapin

WHEN the chilly lake winds are blowing and your boots are covered with muddy snow, there's no place I would rather be than in the orchard—pruning—training those little trees in anticipation of the fruit they are to bear in the years to come.

When the buds begin to swell and the blossom tips appear—when the trees are in full foliage, heavy with the crop you hope to harvest—then there is no place I would rather be than amid the mists of lime-sulphur or Bordeaux, assisting the trees in their fights against nature's pests—insects and disease.

And—Oh, boy!—who would want to be anywhere else when the cherries take on their red and black, ready for the harvest?

No—you can't enjoy the life of the active fruit grower unless you like fruit. I don't mean the kind you see at the corner fruit store, all put up in a fancy package, or the kind you get in tin cans. I mean fruit—the trees—and the big out-of-doors where they grow.

My orchard isn't a large orchard as

orchards in our section go. There are a thousand trees. Half of them are Montmorency sour for the cannery, and the rest are black sweet cherries grown for eating purposes. Yes, literally, to eat and to eat while they are still pure and unadulterated sweet cherries. They are not real cherries after they are cooked and faded and packed away in a can. Some of us who like the real fresh stuff wouldn't call them cherries after they have wilted for a week and you buy them out of a box at the corner fruit store.

Natural Advantages

The state of Michigan has been kind enough to run a State Trunk Line past my trees. God Almighty years ago tore up Leelanau Peninsula and left hills and forests and fertile land. Then he put water all around it. There are a great many people in the world that like just such an environment, and they go a good ways to find it. Leelanau Peninsula bears witness to this fact during the summer months.

These same people are human and like fruit. I had the fruit; the country called the people. Why not bring the two together?

It worked! For two years every sweet cherry has gone out of the road-stand to the buyer untouched by agent's hands. Some people thought it couldn't be done, but it was one of the simplest problems of supply and demand. They have taken cherries in the quart box, in the Fancy-Five-Pound-Pack, in the crate—they have taken them sometimes to the value of \$250 per day.

Roadside Marketing Becoming Popular

Direct sales through roadside marketing are becoming more and more popular. Conspicuous stands are encountered all along the route of the tourist now-a-days, especially in fruit growing sections. A great array of products are offered—vegetables, poultry products, dairy products, honey, pet stock, etc., etc., with sometimes sandwiches and soft drinks on the side.

The writer found that sweet cherries were a sufficient drawing card and has not experimented with any other line.

A four-by-four foot white and blue, tinged with yellow, sign greets the passerby, as follows:

CHAPIN CHERRIES

Fancy Black Sweets

Box—Basket—Crate

WE SHIP THEM FOR YOU

Julius W. Chapin, Suttons Bay

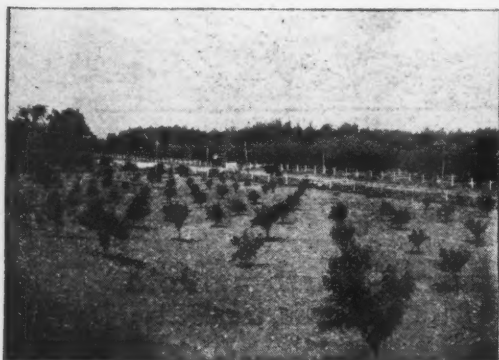
ON SALE NOW

This sign, with the cherries advertising themselves back of the woven wire fence, and the white fence posts in the well-tilled orchard, is our biggest selling agency. Smaller business cards and a few fence signs are scattered over the territory to attract the summer residents who become our regular customers.

Five-Pound Pack Well Received

We attribute a large part of our success to the "Fancy-Five-Pound-Pack" which has become so popular. For two seasons this box has led the way and, advertised "For the Folks

(Concluded on page 20)



Left—Young cherry orchard of Julius W. Chapin, Suttons Bay, Mich. Young trees in the foreground. Black Sweets across the highway. Center—Sweet cherry in Leelanau County, Mich. There are five varieties in this orchard—Windsor, Nelson, Schmidt's Bigerrau, Black Tartarian, and Black Knight. Right—Permanent roadside stand

Currant Growing Increasing in Importance

By Paul Thayer

Pennsylvania State College

A COLORED friend and myself were leaning over the fence of his pig pen one day watching the inmates each trying to get all the food and keep the rest from getting any, when he remarked, "Well, when they named the different animals they *certainly* hit on the right name when they called these 'hogs'." A similar confusion of cause and effect exists in many of our minds regarding the name of that commonest of garden fruits which forms the subject of this article.

Years ago as a boy I learned that the little black objects that gave to currant buns their richness and which we, in boyish humor, called "flies," were not garden currants at all but were really miniature raisins. Of course this suggested at once that they were probably called "dried currants" on account of a resemblance to the fruit of the garden. Nothing could be farther from the truth, for the fact is that the little raisins are the true "currants," having been a principal export of the ancient Greek seaport of Corinth ever since the time when St. Paul preached there and wrote his letters to the Corinthians. Fifteen hundred years later, when people first began to notice the wild bushes with the red, acid fruits and to cultivate these "Ribes" or Grossula, as our present currants were then called, someone noticed a resemblance to the little "grapes of Corinth" or "Currans" and called the little red berries "Bastard Corinthes," from which our modern name of "currants" has evolved.

The Currant a Modern Development

Compared with the grape, the apple, pear, peach, plum, and most of the tropical and sub-tropical fruits, the currant is a modern development. The oldest references are only about 400

years old, while the varieties as we have them now have all been produced within the memory of men now living. In spite of this fact, the greatest single impetus to the development of this fruit, the introduction of the Cherry currant in 1840, is as profound a secret as though it had occurred in the dim and misty past.

All our cultivated red and white currants come from three species which inhabit the colder parts of Europe, Asia, and Africa. From the mountains of northern Africa and southern Europe, from the plains of Brittany and the shores of the North Sea, from Great Britain, Scandinavia, and Siberia have come the forms from which our cultivated currants have sprung. So little was done, or could be done, to ameliorate the wild forms, and they crept into the gardens from the woods and fields so quietly and unobtrusively that horticultural literature up to 1840 has but little to say regarding this fruit. About 1840 M. Adrian Seneclaus of Bourg Argental, France, received some currant plants from Italy, among which was one bearing fruits of unusual size. This currant, which he named the Cherry, has become the progenitor of practically all our modern varieties, and yet it cannot be traced back further than this shipment of plants from Italy. Where the Italian friend of Mr. Seneclaus secured the plants is not known, nor can botanists find any wild form resembling the Cherry, and we are forced to the hypothesis that in the Cherry we have a true "sport" or "mutant."

Rapid Development of New Varieties

In the 50 years following the introduction of the Cherry, we find the greatest activity, both in the development of currant growing and in the production of new varieties. About 1850 Bertin brought out the Versailles, in about 1868 Lincoln Fay produced the variety bearing his name. In 1874 Jacob Moore produced the Ruby, in 1885 the Diploma, and in 1889 the Red Cross. About 1873 the Pomona was discovered, about 1879 Mr. Teas produced the Wilder, and in 1887 Mr. Hooker produced the Perfection. All these and a number of others are descendants of the Cherry. In fact, the only currants of any commercial importance in the United States not having Cherry blood are the Victoria and London Market.

According to the last census, there are over 7000 acres of currants in the United States. Of these, one-third are in New York state, more than half being in the Hudson valley, the other plantings being located in the fruit districts along lakes Erie and Ontario. Michigan is the second state in production, followed by Wisconsin, Ohio, Pennsylvania, and the rest of the northern states. Coming as it does from the colder portions of Europe, the currant is ill-adapted to the heat of the southern summers. Accordingly, it is of little importance south of the Mason and Dixon line.

Leading Varieties

The Wilder is probably the leading market currant today, although there are a good many London Market grown in the Michigan fruit belt. Both

these varieties hold their foliage well. The London Market is apt to have a cluster of small leaves at the base of the stem, which makes clean picking difficult.

The Filler is much grown in the Hudson valley. It much resembles the Fay, which was for years the most popular variety but which of late seems to be losing favor with the growers to some extent. The Hudson valley growers feel that the Filler is superior to the Fay.

The Pomona is a heavy yielder under some conditions. The introducer had six and one-half acres of Pomona, which in three successive years produced \$9000 worth of fruit, or \$460 worth per acre per year. An acre of Pomona in New York state in three successive years produced a total of 17½ tons. The Pomona will stand heavy fertilizing when other varieties run to wood.

The largest berries are produced by the Comet and Perfection. The bunches of Comet, however, are small while the bunches of Perfection are the largest and finest of any variety. The weakness of the Perfection is that it seems a little capricious as to soils, and it does not throw up many suckers from below ground and hence the plant is easily destroyed by borers or by breaking down. The fruit of Perfection will sun scald if not harvested when ripe.

While the Perfection is the handsomest so far as size of bunch and berry is concerned, the handsomest berries are those of the Diploma, a deep rich, glossy red. The Diploma and Red Cross are the sweetest of the red currants, while the White Imperial is probably the sweetest of all. This and the White Grape are the two lead-

(Concluded on page 43)



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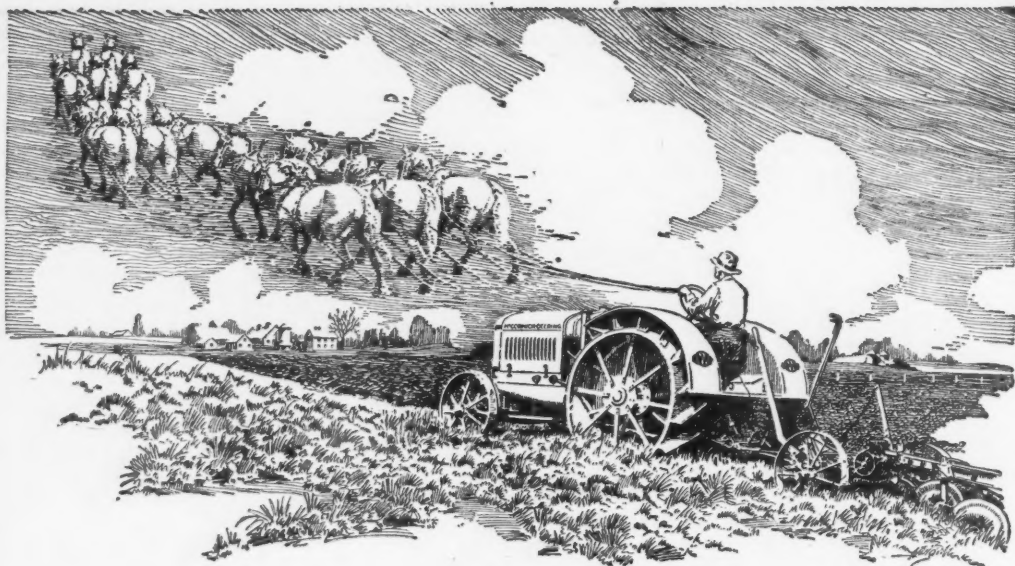
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Low Temperature and Root Injury of the Apple

By Y. P. Bhosale

INVESTIGATIONS have been conducted by the Nebraska College of Agriculture to study the relative hardiness of scion and stock roots of the apple, and to determine the extent to which midwinter soil temperatures at various depths are influenced by culture and moisture content.

Preliminary trials were made in 1915 with one-year-old French crab and seedling apple stocks to determine their ability to resist low temperatures. It was found that most of the plants were killed when subjected to a temperature of 14 to five degrees Fahrenheit for two hours. There was no apparent difference between the hardiness of the two kinds of seedlings.

It was thought advisable to gather information regarding the hardiness of scion roots of several varieties and compare it with that exhibited by seedling stocks. The results obtained

by freezing seedling roots show that many of them are killed in midwinter at temperatures that are often reached in soils at a depth varying from 12 to 18 inches.

During the winter of 1914-15 several varieties of apple were propagated by the piece-root graft method. Two-inch pieces of French crab seedlings were used as stocks and the scions were six inches in length. The roots of these trees were frozen from April 3 to 7, 1917, in order to determine the resistance of scion and stock roots to low temperatures. The trunk was cut off near the top of the original scion and the entire root system was used. There was not more than a fraction of a degree difference between the temperatures of the stock and scion roots.

Taking the size of the scion roots into consideration, they showed more resistance than stock roots. The varieties that were expected to demonstrate maximum hardiness produced scion roots only sparingly and were comparatively smaller in size. The scion roots of these varieties showed

more hardiness than the scion roots of the average varieties. In cases where stock roots displayed more hardiness than scion roots, it was due to the exceptional hardiness of the individual plants. In some cases the original scion was injured more severely than the seedling portion of the graft. This does not hold true with most of the varieties that are commonly grown in the north. Varieties like Tetofsky, Hyslop, Early Pin-nock, Fameuse, and Northern Spy exhibited more than average hardiness.

Midwinter temperature changes in an orchard soil were observed at a depth of seven and one-half and 10½ inches. The object of this test was to find out whether the critical temperatures in the laboratory are actually reached in the orchard soil several inches below the surface during the coldest days of the winter. The orchard soil used for this purpose was a medium heavy, upland loam, which was previously divided into plats with regard to culture. The sod plats consisted of blue grass, which was cut once in a

season but not removed. Sod of these plats gave a better mulch than any other plats. The clean culture plats received clean culture for the past three seasons, and the soil was left bare in winter. The clover plats were mowed once in mid-season and the hay was removed. There was very little mulch effect on these plats during winter. The cover crop culture plat had been cultivated until midsummer for two seasons and then sowed to millet, which afforded a coarse, loose mulch during winter.

The temperatures at a depth of 10½ inches varied in a manner similar to those for seven and one-half inches. However, the temperature at a greater depth was always from one to four degrees warmer than the soil temperature was below freezing. It is concluded that the temperature, even in a cultivated unprotected soil, seldom gets low enough to endanger apple roots 12 inches or more below the surface.

It may be taken for granted that there is danger of root injury to apples under Nebraska conditions during winters when the temperature is very low. This danger could be reduced by providing a protective mulch of some kind. In order to afford more protection when there is no snow, a mulch that will form a dense covering is more preferable than one that will stand erect.

The scion roots of French crab and seedling stocks are more tender than scion roots of most varieties. It would be a good practice to throw soil to the trees in late summer and then work level again in spring, so far as young apple trees are concerned.

It has been found that root injury is greater in moist soil, although there is no difference in the minimum temperature reached during the long, cold periods in mid-winter. Any method that will conserve moisture in order to assure good growth and insure against root injury should be used. A mulch would provide more protection than late summer cultivation. Young apple trees would be better protected by a clean culture in early season followed by a cover crop, or a little mulch of some kind in the fall.

There is less danger of root injury when apple trees reach fruit bearing age because the root system is deep in the soil. Although clean culture may be practiced all the summer, it is advisable to plant a crop occasionally that will add humus to the soil. Red clover would be one of the best crops for a bearing orchard, not only because it adds humus and nitrogen to the soil, but also because it does not compete with the trees for soil moisture like many other crops. It would be more advisable in Nebraska to use only piece-root grafted apple trees until a hardy, vigorous, uniform stock is found.

Use Poultry Manure Carefully

POULTRY manure is an excellent fertilizer if properly used. However, it is very rich and must be used with caution. It contains about 20 pounds of nitrogen, eight pounds of phosphorus, and 15 pounds of potassium per ton, as compared with about 10 pounds of nitrogen, two pounds of phosphorus, and 10 pounds of potassium per ton for average horse manure. In view of its richness, poultry manure is likely to have a burning effect on plants if used in too large quantities. If used at all, it should be scattered very thinly. Properly used, it is a valuable and quick-acting fertilizer.

In order to prevent loss in poultry manure, it should be properly stored. A good absorbent should be used on the dropping boards or under the perches. Since the fertility is quickly lost by leaching and fermentation, the droppings should be stored in a dry condition in well covered bins so constructed that air can circulate through the manure. Poultry manure can also be kept well in barrels in which holes are bored through the sides.

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United States



Rubber Company

Blackberry Varieties

(Continued from page 5)

Florida Marvel, McDonald, Dallas, and Haupt, are supposed to be hybrids with some dewberry blood in them. Most blackberry-dewberry hybrids under cultivation are not hardy in cold climates and are valuable only in southern states or on the Pacific Coast.

Thornless Blackberries and Dewberries

Thornless blackberries have always appealed to the imagination of the gardener just as do thornless roses, but while there are some good varieties of thornless roses, until recently there were no good cultivated thorn-

less blackberries. In the wild there is a fine flavored thornless blackberry species (called *Rubus canadensis*), growing from Georgia to Canada. Some of the places where it has been gathered include Tallulah Falls in the mountains of northern Georgia, the Berkshires of western Massachusetts, the Green Mountains of Vermont, the Adirondacks of New York, and various parts of Maine and northern Wisconsin. It has tall-growing, arching canes, is very hardy to cold, and is limited to the higher mountains except in the most northern states. It hybridizes freely with other sorts in the wild, and hybrid forms with more or less prickles are common wherever it is native. It has been tested under

cultivation but has never succeeded. Because of its hardness and thornlessness, however, many more trials should be made.

The thornless sorts actually in the trade are Cory, Santa Rosa, Sebastopol, and the Austin Thornless dewberry. The Cory is a vigorous trailing sort similar to the Mammoth blackberry of the Pacific Coast. It is, with the Mammoth, the largest of the cultivated blackberries, being much larger than any eastern sort. It is grown commercially in sections of California but, like the Logan and Mammoth, cannot be raised successfully east of the Rocky Mountains. Santa Rosa and Sebastopol are thornless sorts introduced by Luther Burbank. They are

nearly evergreen at Washington and are semi-trailing. They evidently belong to the European blackberry group. In the East they produce only a few small, flavorless berries. Neither sort is being grown commercially anywhere.

The Austin Thornless dewberry was recently introduced and is said to be a thornless sport of the Mayes (*Austin Mayes*) dewberry; it is fully as productive as that variety. The Mayes itself is considered the best home garden dewberry, being superior to the Lucretia for this purpose. It is softer, however, and does not equal the Lucretia as a commercial sort. In the eastern United States the Austin Thornless was the first blackberry or dewberry of value, with entirely thornless canes, and should be tested wherever other dewberries are hardy.

The Peach Credit Bank in Georgia

By J. H. Reed

IF THE Federal Farm Loan Board in Washington will accept a crop as perishable as peaches on which to advance the money for marketing the crop, the establishment of a Peach Credit Bank in Georgia is assured.

A committee of local bankers and business men, headed by W. R. Baker, prominent Macon banker, as chairman, has been appointed and an application for a charter from the Federal Farm Loan Board has been forwarded to Washington under its authority.

In addition to Mr. Baker, T. Rad Turner, C. B. Lewis, George B. Clarke, and J. L. Benton are serving on the committee. The first three are well known Macon bankers, while Mr. Benton is President of the Georgia Peach Exchange. At a recent meeting more than \$100,000 worth of stock in the new bank was under-written, which insures its success if permission to operate is secured from the Farm Loan Board.

The \$100,000 initial capital will, if handled in the same manner as the Intermediate Credit Banks handle their money, enable peach growers in the Macon district of the state to secure \$1,000,000 with which to finance their peach crops this year, and it is expected that this will be the salvation of the industry.

Bankers here are enthusiastic over the prospects of securing a Peach Credit Bank. They say that such a bank will not only provide the peach growers with the money they need at the opening of the new year to handle their trees properly, but will encourage the establishment of canning plants and other by-product plants badly needed throughout the peach belt to handle peaches which should not be shipped to market.

Most of the trouble encountered with peaches, they point out, comes from lack of finances on the part of the peach grower and lack of an outlet for fruit that should not be shipped. Without finances, the grower cannot properly thin or spray his fruit. Without an outlet for inferior fruit through the cannery, the grower takes a chance and ships it, with the result that he often loses money instead of making it.

Both of these defects in the peach industry could be eliminated through the Peach Credit Bank, which would give the peach grower ready funds and enable him to care for his crop properly and realize the most out of it.

"This tree seems to be loaded with apples," observed the city man, indicating a particularly fine specimen.

"Yes, sir," assented the little girl; "father says this is a good year for apples."

"I am glad to hear that," said the visitor. "Are all your trees as full of apples as this one?"

"No, sir," explained the girl, "only the apple trees."

Minerals are just as essential to the health and strength of humans as oil is to the automobile. Eat a variety of foods.

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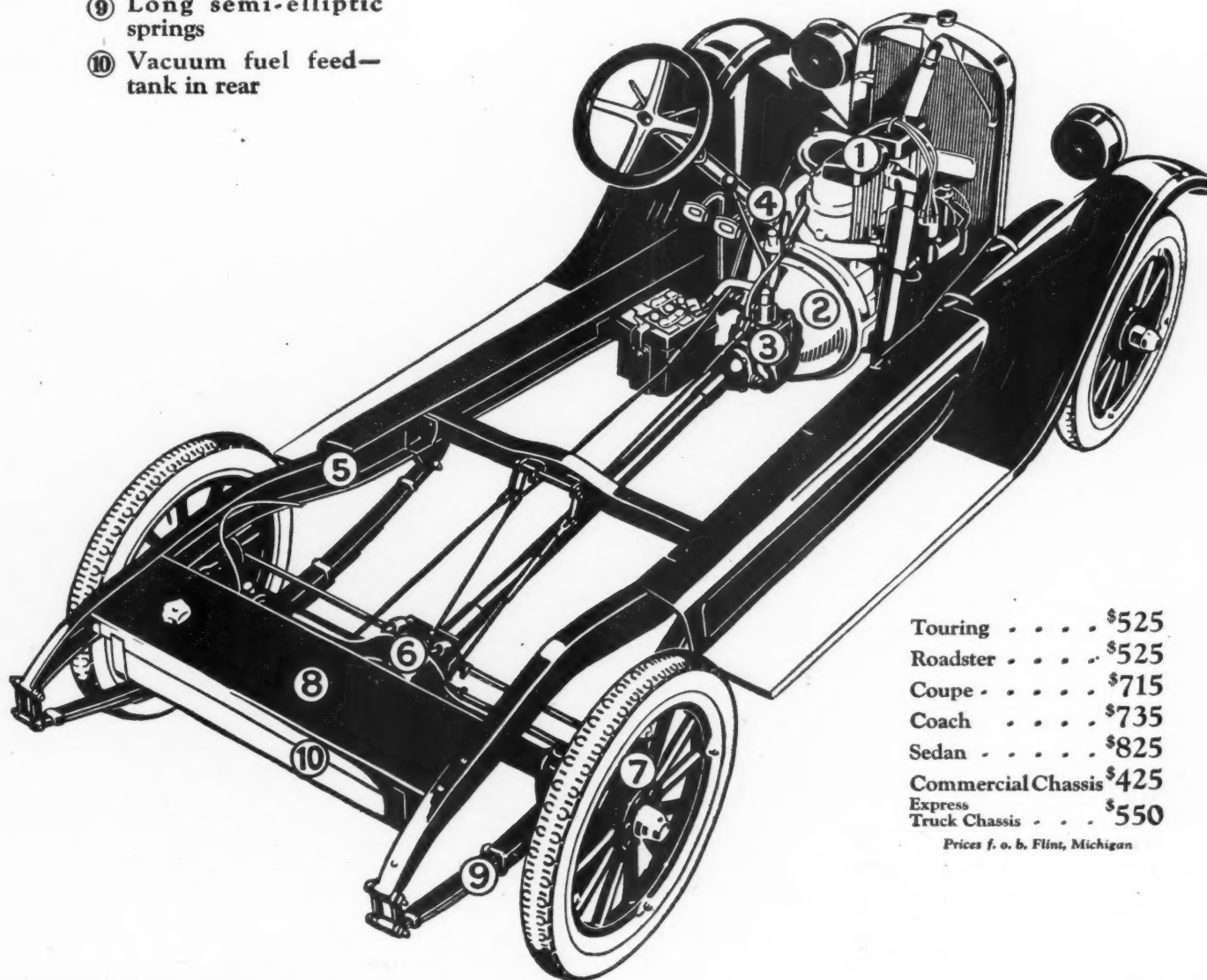
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QUALITY AT LOW COST

Raspberry Anthracnose Preventatives

By C. L. Burkholder

Purdue University

IN RECENT years it has been a pretty general complaint that black raspberry patches are becoming shorter lived. In some cases this is because of some of the new diseases which have been doing more or less damage in many sections of the country. However, in Indiana at least, the old time enemy, anthracnose, has been responsible for more trouble than all of the other diseases combined. Every raspberry patch has more or less of it. Usually it is the limiting factor in determining the life of the patch as well as its total production. Almost all nursery stock has enough of it present to give the new patch a heavy infection early in life.

In this connection it is well to remember when planting that one of the first preventatives is to cut away practically all of the stub of the cane above the crown of the new plant. New growth originates at and just above the crown of the plant, so that actually this old stub serves more as a "handle" in planting rather than an aid to the growth of the young plant. If there is even one anthracnose spot on this old stub, new infection will be spread to the young shoots as soon as they come through the ground. An interesting instance of the devilry these old stubs can do was found in a newly set raspberry patch this summer. An effort had been made in putting out the plants to remove the old stubs. When a number of bad cases of anthracnose infection showed up early in the summer, an examination was made and quite a number of old stubs were found still sticking out of the ground. A count showed 57 such stubs out of 366 plants examined. The total number of infected plants was 32 of this number. Twenty-five were on plants where the old stub was still attached, while only seven were found in the absence of a stub. It would not be unreasonable to believe that in some of these seven cases the stubs might have been knocked off after infection of the young canes had taken place.

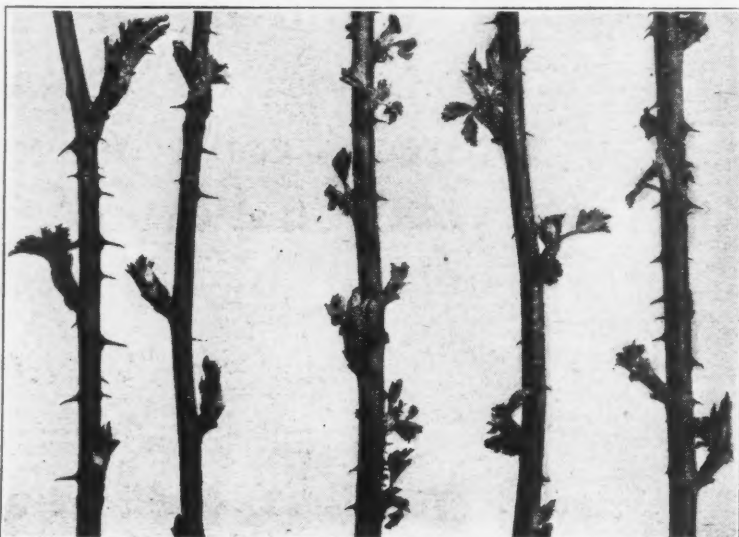
The Critical Period for Infection

The most serious infection of the young shoots takes place early in the spring and summer, at which time the tender canes seem to be much more susceptible. It is this early infection around the base of the shoot that later on results in partial or complete girdling of the cane.

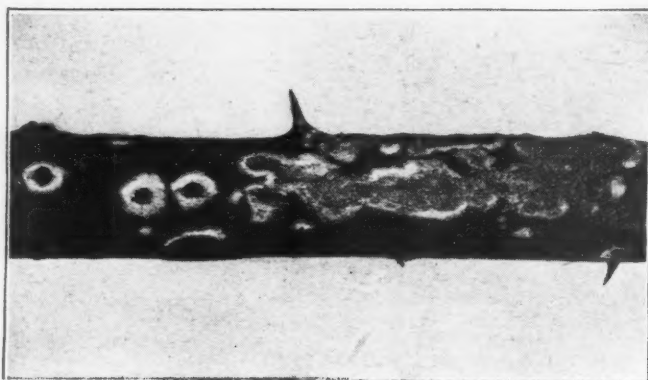
In southern Indiana the raspberry tips often throw up new shoots, one or more inches long, before they are taken up and transplanted to the new patch. Very evidently such plants become heavily infected with anthracnose before resetting. Under such climatic conditions, planting should be done in the fall, or the plants might be taken up in the fall, the old portion of the cane removed, and healed in until the ground is ready for planting in the spring. In one case last summer a newly set patch received three summer sprays and still showed a heavy anthracnose infection. As these plants had started to push up shoots while still in the old patch, they evidently were infected before they were transplanted.

Spraying Gives Conflicting Results

Spraying has given fairly good protection against anthracnose, but experiments in different states have shown a variation in results as far as spray injury to the foliage of fruiting canes is concerned. This is probably due to different climatic conditions. For instance, lime sulphur, one gallon to 40, if applied when the weather is hot, frequently results in defoliation or in a dwarfing and yellowing of the entire plant, as well as a reduction in the crop. L. K. Jones, of Wisconsin, R. B. Wilcox, of the United States Department of Agriculture, and others have found that a delayed dormant spray of liquid lime sulphur, one gallon to 10 of water, applied when the leaves are about one-half inch long,



These canes show the exact stage at which the delayed dormant spray of lime-sulphur should be applied on raspberries and blackberries



A typical case of anthracnose in the advanced stage. The corky tissue in the diseased spots has already begun to dry out and crack. Such a cane is usually girdled and killed before it can completely ripen its crop



Number 1 is a raspberry plant at planting time. Number 2 was set in the spring and taken up from the field the following August. Note the anthracnose spots on the old stub at "A" in Number 1 and on the new shoots "B," "C," "D," and "E" in Number 2. Number 2 plant was set without removing the stub and by August the disease had established itself on the new shoots. If these stubs had been cut off at planting time, at the point indicated by the white lines, the amount of infection would have been reduced.

has a very beneficial effect. The young canes, of course, have not appeared at that time but the strong lime sulphur solution seems to cripple the activity of the fungus on the old canes to such an extent that the young shoots when they appear later on are not subject to such a flood of anthracnose. It would seem logical to spray again to protect these young shoots when they are six or eight inches high, and in Wisconsin this has given added control and no injurious effect on the plants. Farther south summer sprays of either lime sulphur, one to 40, or Bordeaux mixture, have resulted in many cases of injury to the foliage and fruit spurs of the fruiting canes but not to the young shoots themselves. This makes summer spraying a questionable remedy. In Indiana, the yield has frequently been reduced 50 per cent by a summer spray of lime sulphur. Luckily, the delayed dormant spray alone, if thoroughly applied, will hold the disease in check and keep it from having a serious effect on either the length of life of the patch or the total crop per season, provided spraying is started not later than the spring of the second growing season.

Conclusions

Unfortunately, the average grower waits until his patch is heavily infected before doing spraying of any sort. Every patch should be given the delayed dormant spray, regardless of age or fruit prospects. In addition, a summer spray can be applied in a newly set patch as soon as the young shoots are five or six inches high, as there are no fruiting canes to be injured at that time and the new growth seems to be resistant to spray injury. Even in the second season it might pay to apply a summer spray in addition to a delayed dormant if considerable anthracnose had appeared on the previous season's growth. Jones, of Wisconsin, and Colby, of Illinois, have both found that the addition of a spreader to their spray material has given a better control than in plots where the same materials were used without a spreader.

The spraying of tree fruits has been developed to a high degree, but the spraying of raspberries for anthracnose has not yet become a widely practiced commercial proposition. While there are still some features in the control of this disease, regarding which we need further information, there is evidence at hand which indicates that with proper precautions spraying is a good paying proposition. Every effort should be taken to bring the young plantation to the bearing age practically free from infection; after that the delayed dormant spray should be chiefly relied upon to give commercial control.

THE MONTHLY report of the Bureau of Agricultural Economics, issued on March 12, shows the cold storage holdings of apples in the United States on March 1, 1925, to be as follows:

1,813,000 barrels as compared with 2,755,000 barrels on March 1, 1924, and a five-year average of 1,883,000 barrels.

5,259,000 boxes as compared with 8,821,000 boxes on March 1, 1924, and a five-year average of 6,183,000 boxes.

615,000 bushel baskets as compared with 808,000 bushel baskets on March 1, 1924.

In Chicago there were in storage on March 1, 1925, 184,000 barrels, 521,000 boxes, and 21,000 bushel baskets of apples. No figures for the Chicago holdings are available for 1924 or for the five-year average.

BECAUSE of the importance of inter-cropping in young orchards, we are presenting in this issue two articles on the subject. Both treat the general principles, but the one by Sears is particularly adapted to eastern conditions, while that of Allen is fitted to western sections.

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Fruit Setting in the J. H. Hale Peach

PARTIAL or complete self-sterility among strawberries, grapes, apples, pears, plums, and sweet cherries has been known for some time, but it is only within the last few years that this problem has come to the front as a serious one in peach culture; in fact, it has come to the front only since the introduction of the J. H. Hale variety. The *Michigan Quarterly Bulletin* recently contained an article by V. R. Gardner and Stanley Johnston which is of particular interest in view of the large plantings of the J. H. Hale variety during the last few years.

The peculiarity of the Hale peach is that many blossoms which fail to set fruit remain attached to the tree and form rudimentary quarter or third-sized peaches. For this reason the problem has seemed one of fruit development rather than one of pollination. Soil, pruning methods, cultural treatment, and degeneracy of strains have all been suggested as possible causes of the trouble.

In New Jersey, C. H. Connors found that in that state the Hale produces very little good pollen and that cross pollination is necessary if fruit is to set and mature properly.

The high prices paid for fruit of this variety, and the fact that large plantings have been made of the Hale, caused the Michigan Agricultural Experiment Station to begin an investigation of the subject. A block of 175 trees was obtained for testing purposes on the farm of Floyd Barden at South Haven. The trees were located on a good site and soil and were in vigorous condition. For the purpose of gaining information on the influence of nutritive conditions within the tree on fruit setting and development, pruning and fertilizing tests were started in 1924. The following table gives the results of a series of hand pollination tests which were conducted in the spring of 1924:

Results of Pollination Experiments with the J. H. Hale Peach.

| | Number blossoms pollinated | Number fruits developed | Per cent blossoms developed |
|--------------------------------------|----------------------------|-------------------------|-----------------------------|
| J. H. Hale pollinized by J. H. Hale | 1,471 | 0 | 0 |
| J. H. Hale pollinized by Banner | 176 | 68 | 38.6 |
| J. H. Hale pollinized by Elberta | 145 | 52 | 35.8 |
| J. H. Hale pollinized by Kalamazoo | 716 | 252 | 35.2 |
| J. H. Hale pollinized by South Haven | 483 | 169 | 34.9 |
| Elberta pollinized by Elberta | 117 | 45 | 38.5 |

The results showed the Hale to be completely self-sterile, while Elberta, when self-pollinated, set and developed 35 per cent of its blossoms. The four varieties besides Hale used in the test all proved satisfactory as cross pollinizers for the Hale. It is apparent that in Michigan, as well as in New Jersey, the Hale should be interplanted with other varieties. The variety used should furnish plenty of compatible pollen and its blooming season should correspond closely to that of the Hale. The variety should also be of high commercial value. South Haven seems to fill these requirements best under Michigan conditions. The Kalamazoo ranks second best; it comes into full bloom a few days before the Hale, but it opens many blossoms during the flowering season of the Hale. Elberta and Banner bloom a little earlier than Hale and apparently shed a large percentage of their pollen early in the blooming period. They are therefore regarded as unsatisfactory pollinizers for the Hale.

The article emphasizes that the inter-planting of Hale with South Haven in Michigan may not always insure a proper setting and development of fruit of the Hale. Since pollen is distributed by bees, particularly the honey bee, it is a good thing to establish colonies of bees in or near the orchard. It should be borne in mind that in some seasons even with plenty of bees present cross pollination may largely fail, due to cold, wet weather

during the blooming period. Such conditions affect peaches more seriously than apples and some other fruits. The Hale may be planted with confidence if provision is made for proper cross pollination.

Spring Treatment of Peach Borers

IF YOU failed to use the paradichlorobenzene treatment for peach borers last fall, you should use it this spring. However, the results from spring treatment are not as good as those from fall treatment, according to experiments conducted in Georgia by the United States Department of Agriculture. The poorer results from spring treatment are probably due to the larger size of the larvae at that time and to the fact that the borers are located deeper in the trees on the average, making it more difficult for the gas to reach them.

For spring treatment, application of the paradichlorobenzene should be made by about April 1 in Georgia and other southern localities of similar latitude. In sections further north, it should be applied at somewhat later dates, running up to about May 1 in the most northern peach sections. The best time to apply the material is when the soil temperature about the trees reaches about 60 degrees Fahrenheit.

In applying the material, the weeds and grass should first be removed from about the tree. The paradichlorobenzene should then be applied in a narrow ring about two inches from the tree trunk, distributed as evenly as possible. If lumpy, the paradichlorobenzene should be pulverized to the consistency of granulated sugar.

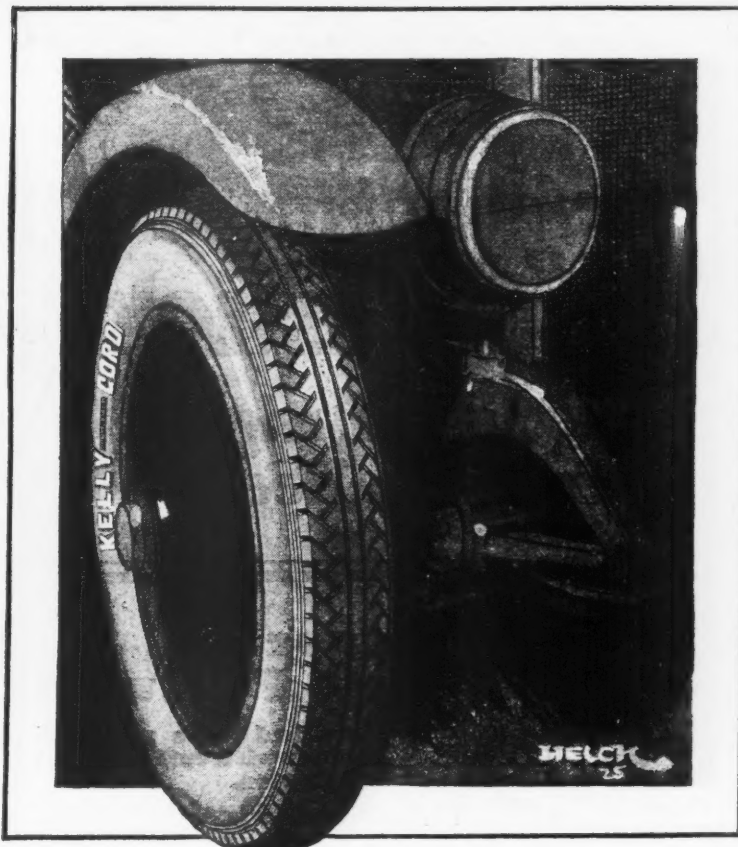
Investigations in Georgia have shown that peach trees three years old and under are sometimes injured by paradichlorobenzene. Illinois workers have expressed the opinion that the supposed damage is due to winter injury. It seems advisable, however, to proceed cautiously in the use of paradichlorobenzene for young trees. If used for trees three years old or under, not over three-fourths ounce of paradichlorobenzene per tree should be applied and the earth which is mounded over it should be removed in about four weeks after application. For trees five years old and older, one ounce of material per tree should be used.

After application, several shovels of earth should be placed over the material, care being taken to avoid pushing the paradichlorobenzene into contact with the trees.

The peach borer attacks both peaches and plums and the treatment described will apply to plums as well as to peaches. Apple borers cannot be controlled effectively by the paradichlorobenzene treatment.

AT THIS time of the year thousands of peach trees are being planted. Because of the seriousness of crown gall, great care should be taken to inspect the tree roots for evidences of this disease, according to W. D. Moore, Pathologist of the South Carolina Agricultural College. Infected trees are almost certain to make a poor growth and bear lightly. The planting of infected trees causes a loss in time and money, and, in addition, the infection of the land will make it necessary to find a new site for future peach orchards.

"Crown gall may be easily recognized by the very rough, black enlargements on the crown, roots, or main stem of the tree. The galls may be as small as a pea at first, but they enlarge with age, reaching as high as eight inches in diameter. On nursery stock the galls, if present, are extremely small, and careful inspection must be exercised to detect them. If a tree shows any sign of malformation on the roots, it should be discarded. Don't imperil your orchard with diseased stock." In South Carolina the State Crop Pest Commission, Clemson College, will make inspections of stock for growers free of cost.



"the best tire

KELLY ever built"

WHETHER you're just going to town or are starting on a long trip across the state, you want to feel reasonably sure that your journey is going to be made in comfort, and comfort means *riding* comfort as well as freedom from tire trouble.

Kelly Flexible Cords will give you real riding comfort and are dependable besides.

The reason is found in the Integral Bead construction, used only by Kelly. Instead of thousands of *short* cords, each cut off and held rigidly at the bead, the carcass of the Kelly Flexible Cord contains only a few *hundred long* cords, looped *around* the bead. This makes it as flexible as an old glove and also makes it possible to use a flexible *tread*.

Try these new Kellys. In addition to their easy-riding qualities, they will out-mile any tire you have ever used,

KELLY
Flexible Cord



Announcing 2 New Trucks

Specially Designed for Farm Needs

New
1 ton

New
1½ ton

Both have
4-Wheel Brakes

Important New Features

- 1—New and more powerful engines with full pressure lubrication.
- 2—Mechanical 4-wheel brakes.
- 3—Complete electric starting and lighting systems—standard equipment.
- 4—Greater strength and sturdier construction than other trucks of like capacities—without excess weight.

The live stock, the milk, the fruit, the garden stuff must reach the market without delay, when ready, to insure the greatest profit.

In these new models, the General Motors Truck Company provides trucking equipment especially designed to meet farm needs.

Built oversize yet light in weight, economical to operate and care for, speedy and with the added safety of four-wheel brakes.

Write today for complete descriptive literature.

The General Motors Truck Company builds trucks and tractor trucks from 1 to 15 tons capacity.

GENERAL MOTORS TRUCK COMPANY
Division of General Motors Corporation
PONTIAC, MICHIGAN

General Motors Trucks

Californians Request Large Sums for Horticulture

CALIFORNIA growers are asking their legislature for an increase of \$40,000 in the appropriation for the Citrus Experiment Station at Riverside. A total appropriation of \$336,000 is being asked for the experiment station.

Other amounts being asked for in the budget are \$47,690 for standardization of fruits and vegetables; \$450,000

for shipping point inspection; \$233,720 for plant quarantine work; \$104,320 for pest control work; and \$14,500 for two additional entomologists and their equipment. The recommendations are the work of the agricultural legislative committee, which represents 32 commodity organizations having a combined business of \$200,000,000 and a membership of about 70,000 growers. In past years the recommendations of the committee have proved of real value in securing proper recognition for horticultural needs;

Selecting the Right Truck

(Continued from page 7)

requirements are sufficient to justify. This is an unusual condition, however, and one not commonly found.

Study the Construction in General

There are many other factors, which, although not directly affecting costs, have much to do with all-around satisfactory operation and which the well-informed truck buyer will not overlook in making his selection.

Turning radius is important. Ability to get in and out of close places quickly and easily is important in the crowded market sections and railroad yards of a city, as well as on the farm. Again, the truck must operate on unimproved roads and lanes, as well as go right into the fields and orchards for loading. A turning radius of about 23 feet is generally satisfactory for a 2000-pound truck, and 26 feet for a 4000-pound vehicle.

Accessibility of construction means much to the truck owner. It means convenience and a great saving of time in making adjustments and repairs. It saves money when the services of a mechanic are necessary, as it enables him to do his work with promptness and dispatch. The purchaser of a motor truck will do well to look to this phase of his investment. He may not be sufficiently familiar with trucks to recognize accessible construction without having the various points designated, but he should not fail to have the salesman go into this subject thoroughly.

The Removable Cylinder Feature

The removable cylinder feature, for instance, is a great forward step in accessible engine construction. This design makes it possible to replace cracked, worn, or scored cylinders without discarding the cylinder block, or necessitating an expensive rebor-ing job. Not only is cylinder replacement a simple, easy, and economical operation, but engine life is materially increased.

The design and arrangement of steering gear should have careful consideration. By taking the driver's position in the seat, the prospective truck purchaser can get a fairly good idea of the extent to which the steering gear is designed for comfort and effective operation. The driver should be able to sit in a natural and restful position with the wheel in front of him so that stooping is unnecessary. There should be plenty of foot room and easy access to the cab from both sides of the truck. The steering gear that is mounted on ball bearings offers the advantage of easy steering under all conditions of road and load.

Practical steering gear construction goes a long way toward reducing strain and fatigue on the driver. The operator is naturally more competent in every way when he is not physically tired. He takes better care of the truck and watches more closely those many details of operation which have an important bearing on transportation costs.

Cushioning of loads is a foremost consideration in fruit transportation. Damage to cargo caused by the jolts and jars of road travel means just so much in lost profits. Pneumatic tires have, however, gone a long way toward providing the necessary protection. Scientific spring construction is also a big contributing factor in this direction.

It is hardly necessary to discuss the subject of tires, as pneumatics are obviously the practical equipment for the fruit grower, not only from the standpoint of cushioning the loads, but likewise for traction and speed. Spring construction should, however, be carefully investigated, as different makes of motor trucks offer greatly varying degrees of efficiency in load cushioning.

Springs should combine sufficient flexibility for cushioning the lightest loads with sturdiness equal to the demands of capacity loads under varying conditions of operation. The only way in which the prospective purchaser

can intelligently judge spring performance is by a practical demonstration.

Good Lubrication Is Essential

Lubrication has so much to do with long service-life and capable truck performance that its importance cannot be too strongly emphasized. Thorough engine lubrication demands a system which forces oil to all working parts. Ineffective lubrication of any part of engine or chassis causes rapid wear and materially affects smooth, efficient operation.

Proper chassis lubrication demands not only a system that combines positiveness and thoroughness, but convenience as well. The matter of convenience is important because chassis lubrication is ordinarily taken care of by the truck owner himself, and unless the job is made easy for him, there is great temptation to neglect this important phase of maintenance, with the consequent risk of damage to the truck.

The substitution of oil in many places where grease was formerly used, together with the use of high-pressure greasing for those parts still requiring grease, has done much to facilitate chassis lubrication.

A few minutes with an oil can are sufficient to fill the various oil reservoirs. High-pressure greasing is accomplished by simply attaching the nozzle of a powerful grease gun to connections with which the parts requiring such lubricant are equipped.

The entire greasing operation can be completed in an incredibly short time and in a way that eliminates guess work. Lubricant is forced into the closest fitting bearings and wearing parts, at the same time ejecting the old grease, grit, and dirt. This is a marked improvement over the old method of filling and screwing down grease cups, not only in general effectiveness, but in the saving of time and effort.

The manifest importance of adequate lubrication naturally suggests to the truck buyer the wisdom of making sure that the vehicle he selects is equipped with modern and thoroughly practical systems of engine and chassis lubrication. He can only do this by insisting that the salesman go into this matter very carefully, showing and explaining in detail just what provisions are made for adequate lubrication.

Consider the Company

Aside from the various phases of mechanical construction, the truck buyer should seek complete assurance as to the stability and integrity of the company back of the product. It is decidedly to his interests to make sure that his investment will be protected by a manufacturing organization that is going to remain in business, and whose resources are sufficient to provide such service as may be needed throughout the life of his truck.

Space does not permit us to include in this article all the points which might be suggested as worthy of consideration in the selection of a motor truck. Outlined in the foregoing paragraphs, however, are some of the outstanding factors which, if carefully observed, will materially help the fruit grower to choose a truck that is accurately adapted to his needs and one that is capable of delivering the utmost in money-earning transportation.

AMERICAN FRUIT GROWER MAGAZINE: In obedience to my conscience I write to tell you how much I like your magazine. It has made a wonderful change in my fruit growing. I have obtained so much good from your magazine that I feel I would be working at a great handicap without it. It has been the means of doubling my profit and of helping me to raise better fruit. It has helped me to understand the business better than I ever understood it before. I wouldn't be without it at any price.

I am glad to help you increase your subscription list and I am sending enclosed a list of people interested in fruit growing.—John P. Martyr, Des Moines Valley Fruit Farm, Iowa.

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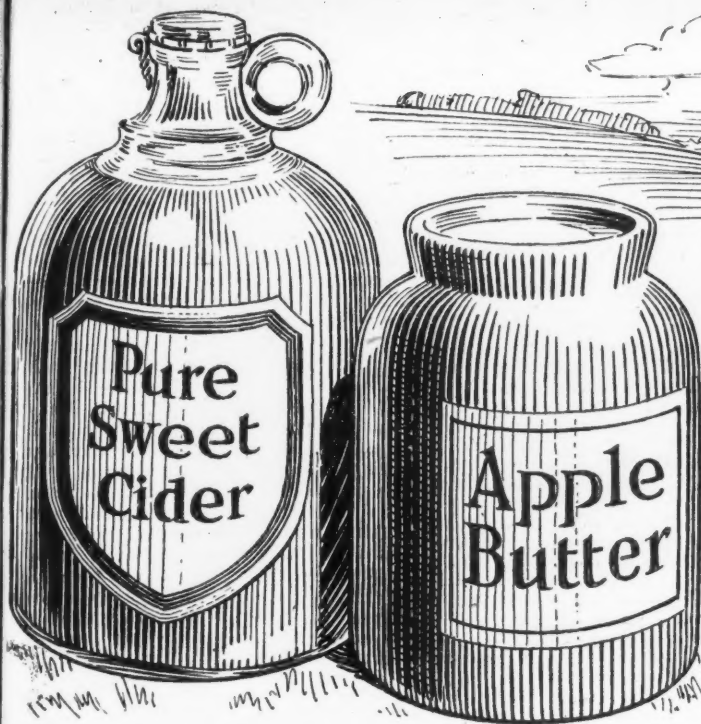
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High-Grade Bottled Apple Juice Brings Full Profits From Your Entire Apple Crop!

CIDER—and its many by-products now sell at a big profit! It offers a splendid opportunity to market your entire apple crop—without waste—and without loss. Orchardists everywhere—using *the Mount Gilead Process* to convert their undergrade apples into sweet cider and other apple products—have found a ready, year-'round market. *And they get the same profit, bushel for bushel, as for grade "A" apples!*

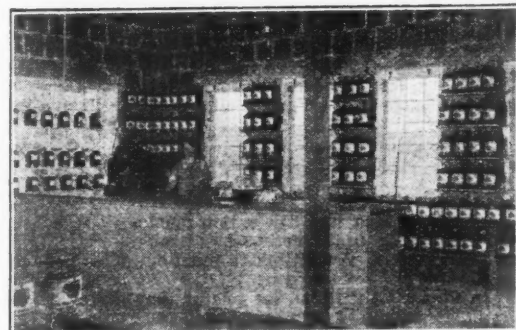
The Mount Gilead Process

of manufacturing cider is the result of years of research and experiment. It is the final development of complete equipment that covers every operation. It produces a pure, healthful fruit juice beverage that will keep indefinitely without fermentation. The cider remains pure, sweet, highly palatable, and full bodied, retaining all the flavor and food value of the apples from which it

is made. Absolutely no artificial preservatives or other adulterants are used in its making. It complies in every respect with all Federal Prohibition Regulations and brings an unusually attractive price over the ordinary product. Cider making is now a sound, money-making industry that knows no slack season, and cider has become the favorite fruit juice of the nation.

Progressive Orchardists Use Mount Gilead Equipment

For the man who has a large orchard—who wants to sell his entire crop—and wants to make big money in a clean, growing business of unlimited opportunity—the success many orchardists are having with the Mount Gilead Process will be a revelation and an inspiration.



The scene above shows the sales room of a prominent Ohio Orchardist who uses the Mount Gilead Process. His production is about 15,000 gals. a season.

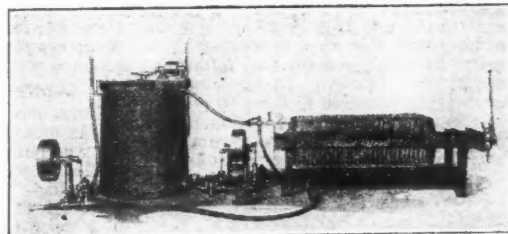


Fig. 2694—above—Mount Gilead Wood Plate Filter with Complete Equipment for refining and clarifying sweet cider by the Mount Gilead Process.

We manufacture a complete line of cider presses from small hand presses to the largest hydraulic types for custom and commercial use. There is a Mount Gilead outfit to handle your requirements—completely—for making cider and ALL cider products at the farm, roadside market, custom mill, or orchard.

The Hydraulic Press Mfg. Co.
104 Lincoln Ave. Mount Gilead, Ohio

THE HYDRAULIC PRESS MFG. CO.,
104 Lincoln Ave., Mount Gilead, Ohio.

Dear Sirs: Please send me free copy of your "Golden Harvest," by Howard F. McMillan. I will have an average of bushels for pressing cider. Tell me how to change my undergrade apples into golden dollars.

Name

Address

An Experience in Roadside Sales

(Continued from page 10)

Back Home," has been shipped successfully from "coast to coast by parcel post."

One of the biggest canners in the Michigan fruit belt drove up to the stand one day to satisfy his desire for sweet cherries. He spied the five-pound pack on the counter and asked to see it. It was the first that had come to his attention. As he folded back the hinged covers, saw the two perfect cherry leaves and neat business card overlying the tinted bond paper which encircled the neatly rowed cherries, he remarked, "First I've seen in such a package—look like bon-bons. How much do you get for this box?"

"Two dollars at the orchard. Twenty-five cents extra for postage, insurance, and mailing," was the answer.

"Forty cents a pound for sweet cherries! It can't be done."

Quality Products Command Good Prices

"But it is being done, and we have packed and shipped as many as a hundred boxes a day. These people who buy here think nothing of paying that price at the fruit store for fruit far less attractive than this. They do pay the price when you give them the goods, the quality, and the package."

"Yes, but you'll kill your business by asking such a price," was the further comment.

"Mr. R—, we can't afford to put them up any cheaper. It takes expensive grading and packing to put them up that way. We have to sacrifice some on our crate stuff, too, after those cherries are taken out."

It is pretty hard for one to convince a canner who pays five cents a pound for such fruit at the cannery. But our next customer, a summer resident from Northport Point, who hailed from Washington, D. C., left mailing instructions for 14 boxes to be mailed to his friends in the Capital city.

Shipments Made Near and Far

The order book for box shipments during 1924 has such addresses as Tacoma, Wash.; Los Angeles, Calif.; Tampa, Fla.; Portland, Me.; and hundreds of points between. Although no guarantee is extended as to condition on arrival, we have yet to receive our first complaint of cherries spoiled in transit. Every shipment goes out insured parcel post, with special delivery if requested.

Every precaution is taken to see that the cherries in the box are perfect—free from bruise and blemish. The fruit is all clipped from the trees with scissors, leaving about three-quarters of an inch of stem attached to the cherry. Three layers of cherries in perfect rows of from 10 to 12 each are packed in the box by girls who soon become expert at packing. The mailing, even to insuring and cancelling the stamps, is done at the orchard, which allows each day's pack to reach the evening train. The cherries are at no time cooled; we rely on their quality and high sugar content to carry them to destination in good shape.

Twenty-five hundred quarts were retailed at the roadside this season as such—not put in boxes or crates. These were eaten out of hand by the purchasers or on their tables at home. The accumulation of cherry pits near the stand bears witness to the fact that many were consumed on the ground.

Case shipments are not advised because they do not present as attractive an appearance on arrival. Sixteen-quart standard cases have been shipped by parcel post as far as 500 miles with good results, but customers are advised against making long parcel post shipments of this package.

Requirements for Successful Roadside Selling

When a grower lives on a frequented

thoroughfare or near enough to a city of sufficient size to afford him customers, roadside sales should prove profitable with the right kind of offerings. The very first thing for the grower to consider is a quality product in an attractive package. Second comes service, which every customer expects and appreciates.

As to quality, we always offer our customer the very best we have and set the price accordingly. If the goods we are offering are not the very best, we drop the price a little and make explanations. Our customer thinks a whole lot more of us for this policy.

Ingenuity Practiced

About 20 miles north of Traverse City on Michigan State Trunk Line 22 is the little Indian village of Peshawatown. It presents a rather dilapidated appearance now, and the Indian population has dwindled to about 150. A principal industry of these Indians during the winter is basket making. They make beautiful baskets of all colors, shapes, and forms, and these are found on sale in the variety stores of the region. Taking advantage of the interest in Indian baskets, the writer last season had a supply of these baskets made as containers for cherries. They held about two and a half quarts and cost 30 cents each. Many cherries went over the counter in these baskets.

Service occupies a broad field. It not only embodies the actual selling and waiting on your customer, but it also includes arousing his interest in your product and establishing personal contact.

Takes Customers Through Orchard

If you want to hear laudatory things said about yourself and your occupation, just escort a party of tourists through your orchard at cherry harvest time. They probably never had

such an experience before. They have always thought of this fruit in terms of the fruit store and associated it with sunny California. The trees heavy with ripened fruit, some branches almost touching the ground, are a veritable black, interspersed with the dark green foliage. I have a good many regular customers who often come for no other reason than to show the newcomers to their summer home or hotel, "the sweet cherry orchard." And we are always ready to show them. They then have something to write about to "the folks back home" and those letters must be accompanied by samples of fruit. Many cameras are brought into the orchard, but the results to the photographer are often disappointing because the fruit does not show up well in the picture.

We estimate that 1500 cars stopped at our orchard last season, these cars carrying more than 5000 people. Probably 1000 visitors saw the fruit from the inside of the fence and took a sample from the bending branch—direct advertising and very productive of sales. Some of these people left their 20 or 25 cents for a quart of cherries while others used their check-book for an appreciable sum.

Late last June 400 letters went out to our 1923 customers reminding them that cherry time was approaching—that we again wanted them to enjoy the "best fruit that nature can produce." This year there are more than a thousand names on our mailing list. They will all receive a letter and a short order form for their convenience in ordering.

There's a lot of work in the orchard, but the man who takes pride in his efforts, his orchard, and his product will enjoy it. He will prune, fertilize, cultivate, and harvest. He will market only first-class produce in a manner that will bring returns in hard cash as well as in satisfaction.

The Fig Industry of Texas

(Continued from page 8)

near the surface, and cultivation must be shallow in order not to break off many of these. A dust mulch must be made and renewed frequently.

In preparing the land for setting the crop, it is highly advisable that the soil be broken deeply, as such preparation makes it easy for the roots to go deeply into the ground. This is very desirable not only to permit the entrance of air into the soil, but to make it easy for the roots to go down deep, where liberal supplies of moisture will be present during dry spells. The usual method is to plow the ground broadcast, just as deeply as possible. Then a disk harrow is run over it several times and this is followed by a spike tooth harrow. If necessary, a roller or planker is used to follow the spike tooth harrow. In other words, everything possible is done to get the soil in good physical condition before setting the trees. This will go a long way toward insuring good growth of the trees and profitable crops in the future.

Start Cultivation Early

Cultivation is started in February or early March, this being given with a harrow on the order of the Acme harrow. Cultivation is kept up until October or early November. Some sow bur clover as a cover crop in October, but many sow no cover crop at all. The bur clover has been found to be a very effective winter cover crop.

An annual application of commercial fertilizer is applied by the best growers. It is broadcasted and worked into the soil at the first cultivation. Usually from 300 to 600 pounds per acre is used, depending on the age and size of the tree and the condition of the soil. Where bur clover is grown as a winter cover crop, a commercial fertilizer analyzing 12 per cent phosphoric acid, no nitrogen, and four per cent potash is used. Bur clover sup-

plies enough nitrogen when a crop of it is grown each winter. Where no clover is grown as a winter cover crop, a 10-4-4 or 10 per cent phosphoric acid, four per cent nitrogen, and four per cent potash fertilizer is ordinarily used.

A large amount of potash is needed because of the heavy amount of sugar removed in the figs. The potash gives a sweeter and more tender fig, thus resulting in a bigger yield than where potash is not used. Those who would get a good crop never fail to provide liberal amounts of plant food in the form of fertilizer, or fertilizer and cover crops for the figs. Figs will not produce well without plenty of food.

Control Rust with Bordeaux

Only one disease gives any appreciable amount of trouble, and that is the rust on the leaves. This is controlled fairly well by spraying three or four times with 4-4-50 Bordeaux mixture. If this disease isn't controlled, new wood is not produced, and thereby the following season's crop is reduced or eliminated. The sprayings are usually given three to four weeks apart, the first being applied in late April or early May. The best growers give these sprayings whether disease shows up or not, as they figure it is good insurance and cheaper to apply the spray than to take the risk of having the rust destroy a crop.

Harvesting usually starts late in June and continues until late November or early December. Because of the harvest extending over such a long period of time, the work can be more economically done than if this large amount of fruit had to be gathered in a few weeks' time, as is the case with peaches, grapes, and other fruits.

In harvesting, the orchard is gone over every day during the heavy part of the season, and three times per

week when the picking season is not at its height or when the weather is cool. Very late in the season, once per week is often enough.

Pickers Wear Two Pairs of Gloves

The pickers are paid at a certain rate per bucket for the work and the price usually figures around one-half to one and one-half cents per pound, depending upon the age of the trees, size of crop, rapidity of ripening, etc. The price per bucket varies with all these different things.

The pickers wear rubber gloves, and canvas gloves on top of the rubber ones. This is necessary because the juice from the fig will take the skin off the hand without this protection. The canvas protects the rubber, and the rubber, the hand. The grower, of course, furnishes the gloves to the pickers. With the trees headed low, no ladders are required, and the picking of the fruit is accomplished with comparative ease.

Pruning Methods

Annual pruning is practiced. When first planted, a tree is headed back to six or eight inches from the ground so as to promote the formation of a low head. After the framework is properly formed, the previous season's growth is each year headed back to a stub six to 24 inches in length. Such heavy pruning can be practiced with the fig because it does not seem to be easily stunted by heavy pruning.

The fruit, which is borne only on new wood, is larger and of better quality on trees which are thus heavily pruned annually. The heavy pruning also tends to lengthen the bearing season. The most successful growers practice heavy annual pruning.

Varieties

The Magnolia variety is grown al-

most exclusively in the commercial orchards. The Celestial may be found in home orchards in some portions of the state, but the Magnolia is the only commercial variety grown in that section. While this variety is not adapted to the Southeast, yet it is by all odds the best variety for south Texas. It produces a large fruit, the skin being a pale green color. The quality is very good.

Preparing the Figs for Canning

Different methods of canning are practiced by the factories, but, in brief, the most commonly used process is to dip the figs for just a few seconds in a boiling solution of lye. This removes the skin. Usually a pound of lye is dissolved in 10 to 12 gallons of water. Wherever possible, it is desirable to wash the fruit in running water after it is taken out of the lye solution. This will clean it better and more thoroughly than dipping in several different changes of water. They are then cooked in a heavy syrup two to four hours, and packed in tins or jars. With some varieties, it is not necessary to remove the skin, but with the Magnolia, this is necessary if the best canned or preserved product is to be obtained.

THE FEDERAL Horticultural Board held a meeting in Washington on March 18 with growers and representatives from Porto Rico with reference to the shipment of fruits and vegetables from that Island into the mainland of the United States.

The purpose of the hearing was to ascertain whether or not Porto Rican fruits and vegetables may be the means of introducing new pests into the United States and to enable the Department of Agriculture to take any precautions which might seem necessary to safeguard the horticultural industry in the United States.

Down with them....

San Jose Scale
Blister Mite
Peach Leaf Curl
Peach Blight
Apple Scab
Pear Scab
Apple Powdery Mildew
Red Spider, etc.

Give them an inch and they take a mile.

Nothing can be *too good* for destroying the pests that eat the profit out of your business.

For a long time Liquid Lime-Sulfur, despite its drawbacks, was the best thing for the purpose.

Today Dry Lime-Sulfur has replaced it almost universally because it has all the virtues of the old with none of its drawbacks and, in addition, distinct virtues individual to itself.

For example:

1. Its effect lasts much longer owing to a special ingredient that slows up oxidation.
2. It is extra adhesive.
3. It is less caustic and therefore safer for foliage.
4. Its use means that you no longer pay for freight and cartage of water.

5. It cannot leak, freeze or crystallize.

6. It requires far less space for storage.

7. One car load is the equal in efficiency of six cars of the other.

8. No wastage in carry-over.

Lime-Sulfur is both an insecticide and a fungicide.

As an insecticide: The idea is to have the suffocating gases last long enough to effectively smother. Liquid Lime-Sulfur breaks down quickly—the Dry lasts much longer.

As a fungicide: The idea is for the spray on the tree to spread well, stick fast and hold its fungicidal quality as long as possible. Dry Lime-Sulfur lasts after the old-time Liquid has lost its efficiency.

In a word: A new era has been brought by Sherwin-Williams Dry Lime-Sulfur.



Order from your insecticide supply dealer

THE SHERWIN - WILLIAMS CO.

Cleveland, Ohio

Stop Orchard Troubles

There is a Sherwin-Williams spray for every orchard pest and disease.

DRY LIME-SULFUR
ARSENATE OF LEAD
FUNGIC-BORDO
PARIS GREEN
LONDON PURPLE
PESTROY, ETC.
ARSENATE OF CALCIUM

For full information see the Sherwin-Williams dealer in your town.

Important about LONDON PURPLE

This remarkable product, Hemingway's London Purple, has the quickest killing properties, and due to its extreme fineness, insures maximum spreading, covering and adhesion. Unique for dusting purposes, also, because of its extraordinary fineness. Strongly recommended for such pests as Potato Bugs, Cotton Worms and Tobacco Worms. Can be obtained only from dealers in Sherwin-Williams insecticides.

Are you sure you are not spending too much for your tires?

There is no need to renew your tire equipment so often if in the first place you buy tires that are made for your kind of work.

Fisk Red-Tops are built especially for the rough use tires get in farm service. Their extra ply and extra tough red rubber tread give them a remarkable resistance to wear. In most cases Fisk Red-Tops outwear several ordinary tires.

A Fisk Red-Top costs little more than the ordinary tire and this longer life makes it the cheaper in the end.

If you want to spend less money for tires and forget about them during the long, busy season, buy Red-Tops now.

The Fisk Line is complete, including all types, from a good tire at a low price to the highest grade tire at a reasonable price

FISK

RED-TOP TIRES



Birds Reward Protection by Eating Insect Pests

THE ECONOMIC value of birds, especially insectivorous birds in farm districts, cannot be too strongly emphasized, in the opinion of the Biological Survey of the United States Department of Agriculture. For this reason the bureau is interested not only in the protection of migratory game birds, which is one of its important functions, but also in the conservation of all beneficial bird life.

Hardly an agricultural pest exists but has numerous effective bird enemies. For instance, 25 kinds of birds are known to feed upon the clover weevil, and a like number upon the potato beetle, 36 on the codling moth, 46 on the gipsy moth, 49 on horseflies, 67 on bill-bugs, 85 on clover-root borers, 98 on cutworms, 120 on leaf hoppers, and 168 on wireworms.

Birds benefit the farmer also by eating quantities of weed seeds. It has been estimated that a single species of sparrow in a single state—Iowa—consumed annually 875 tons of weed seeds. Birds do not, of course, especially single out the noxious seeds or an insect pest for food; but, eating indiscriminately and voraciously, the most abundant food is taken first, and this is likely to be the moving caterpillar or adult insect, or the seeds on the plant or on the ground, where they have been carried by the wind. Many species of birds perform another important service to man through their feeding habits, since they act as scavengers. In districts where the disposal of waste is not completely taken care of by community and individual

effort, birds make a valuable contribution to public health.

Next to man himself, wantonly using his gun, the worst enemy of farm birds is the domestic cat. Storms also destroy a great many birds by cutting off their food supply. Protection against the elements cannot often be provided for birds except where refuges or sanctuaries are maintained for them, but a protective public sentiment, supported by effective laws, will lessen the damage done by man and domestic animals. Birds may be still further encouraged and increased by the provision of food trees, such as the mulberry, which will serve the double purpose of attracting them away from cherry or other fruit trees and supplying them with suitable food.

Keeping Cider Sweet.

CIDER once more has become a popular beverage, after a period of disrepute because so many owners insisted on having it "hard." The younger generation was long unacquainted with the delicious flavor of cider when it was sweet or had turned just enough to have a little tang to it, while remaining within the legal zone of one-half of one per cent.

Cider was a difficult subject to handle in years past because it always insisted on "working" at a rapid gait unless checked by some chemical preservative against the use of which a strong and in most respects wise prejudice had grown up. Cider ought to be a universal drink because of its wholesomeness, its delicious flavor, and the ease with which a supply may be made at home.

It may easily be preserved from "working" and acquiring the mule kick so well known to the early settlers and their immediate descendants. It is now bottled or "canned" much after the manner of canned fruit and it keeps quite as well. Chemical preservatives, such as the salicylic acid, boric acid, formic acid, benzoic acid, and sulphurous acid are not necessary.

The good old apple juice fresh from the mill with all its bouquet and fresh flavor needs only to be sterilized to become as healthful as the apple itself. To keep the cider all year and have it as fresh and delightful in spring as in fall, put it on the stove and heat it to the boiling point. But do not let it boil. This slow heat usually is ample for sterilization. It should then be bottled hot, the bottles being sterilized. Placed in a cool place it will keep as well as any other fruit juice. It has been preserved by the cold-pack method successfully, using patent bottles with a seal to be pulled tight after heating.—Am. Pom. Soc.

Apple Pedigrees

IT TAKES a long time to invent a new variety of apple. It must grow from seed in the first place, and it takes a number of years to bring an apple from seed to flowering and fruiting, and then the seedling is even more likely to be an inferior type than a superior one. Yet there are more than 1000 varieties of apples grown and sold in the United States, although the standard and well-known varieties are much less in number.

Two which remain as topnotchers are old-timers. These are the ever-

popular Jonathan, celebrated for its vigor and hardiness, and the Grimes Golden. Both are among the best known and most widely distributed varieties. The Jonathan originated on the farm of Phillip Rick of Woodstock, Ulster county, New York, from a seed of Esopus Spitzenberg, an ancient favorite. The first published account of the Jonathan was put out by the New York Horticultural Society in 1826, although the tree was much older than this date would indicate, for it had been in bearing and propagated for some time. It was planted sparingly for a number of years before its worth was demonstrated. Its hardiness and resistance to cold, which is greater than that of the parent tree Esopus, is one of its best points.

The Grimes Golden originated in West Virginia, probably in the last of the eighteenth century, for it was known and on the market as early as 1804. It has been for more than a century the popular yellow apple. Practically all yellow apples are of high quality and are increasing rapidly in popularity with the public. Grimes Golden is not naturally as long-lived as the Jonathan, being subject to a disease known as collar rot, which causes it to decay at the ground. This is its only fault and to obviate this trouble trees should be bought which have been double worked on harder and thrifter bodies. For the home orchard the Jonathan and Grimes should be selected. The Grimes Golden is an ideal apple for the holidays, being at its prime about that time. The beautiful tints of red apples and the bright, attractive golden colored apples make a pleasing and effective contrast on the fruit stands and as centerpieces on the dinner table.—Am. Pom. Soc.

Orchard Maps Useful

F. D. SIMPSON of the Simpson Orchard Company, Vincennes, Ind., recently sent us a copy of the map used in the orchard operations of his company. The map, which is printed, shows the location of the various blocks of orchards and indicates by means of small circles the positions of individual trees. The variety names are indicated by means of numerals placed at the ends of the rows, accompanied by a descriptive key.

The maps are used particularly in connection with spraying and for keeping a record of the orchard operations in general. There are blank spaces accompanying the map which provide room for the date, the number of the spray, the name of the foreman, the stage of development of the buds, the spray formula used, the nature of insect and disease attacks, the direction and strength of the wind, the temperature, and the weather.

One chart is used to show the records for about a week. The weather for each day is recorded by various marks. A circle with a clear center indicates clear weather. A half blackened circle indicates partly cloudy weather. A full black circle indicates cloudy weather. A plain circle with an "R" inside of it shows that rain fell on the day in question. Thunder-storms are shown by an arrow of irregular shape, resembling a stroke of lightning. A series of these figures is included on the sheet for each day of the week. By means of a check mark the weather conditions can easily and quickly be recorded. Provisions are also made for showing which side of the trees was sprayed best.

Such a system of keeping account of operations is often valuable in checking up past work, and it often provides a means of explaining results not otherwise understood. Records like these, preserved from year to year, become increasingly valuable to orchard owners. They may also be used for locating individual trees of merit, as well as trees that are diseased or injured. The replants and other points of interest can also be shown readily. The maps can easily be retained in book form or in large envelopes. We regret that the size of this map prevents its presentation.

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Successful Grape Growing

(Continued from page 7)

his No. 1 plants and set his No. 2's, which causes me to wonder about the possibilities of the No. 1's.

Level Prairie Land Satisfactory

"Mr. Cummings says it is not necessary to have high, dry, rough, or rocky land for grapes. He likes the level prairie land such as this Fairview section, and he says, 'The wetter the land the better, provided the proper system of surface drainage is used.' His advice to every farmer is: 'If you have a wet spot on your farm, put it in grapes.' For the benefit of persons interested in grape culture, Mr. Cummings has kindly outlined the processes producing his wonderful vineyard.

"Five tons of lime per acre were applied to the land three years before the vines were set, in February and March, 1922. The total number of vines was 1339 to the two and one-half acres. Between the rows the first summer he raised tomatoes, watermelons, potatoes, and about 6000 grape cuttings. He did not stake the vines but kept them thoroughly cultivated. Five vines were accidentally destroyed in the summer and the next winter grub worms cut off 50, two inches below the surface of the ground. Fifty-five vines were, therefore, reset and are only one year old.

Cover Crop Turned Under

"In the fall of 1922 the spaces where tomatoes, etc., had grown were sowed in wheat, which was plowed under in the spring. The weakest vines were thoroughly fertilized with cleanings from the houses where he keeps 300 chickens. In the spring of 1923 he erected his trellis work, which I wish to say is a marvel of painstaking workmanship. The end posts are set in cement in holes dug about 39 inches deep. They are braced with cement placed in holes dug two feet deep and 18 inches long. The cement is placed six inches below the surface to prevent frost pulling the posts.

"Posts in the row are 16 feet apart, all bois d'arc, and are set 26 inches deep. Holes bored in these posts 58 inches from the ground support the top wire of the trellis and 20 inches lower is the other wire, but 18 inches would be preferable, he says, as the winds injure the vines before they can get a firm hold across the greater space.

Vines Pruned in May

"In the spring of 1923 he pruned the vines back to one and two buds after the twelfth of May, as he was late in getting up the trellis. A lath was placed in the ground by the side of each vine and was firmly tied to the vine about one inch above the ground and again about two and one-half inches higher, and also to the lower wire, with a string to extend between the wires. Binder twine was used for tying, and it did not injure the vines. During this summer the vines were tied to the laths every eight or 10 days until they reached the first and then the second wire, the ties being about four inches apart. The vines grew as straight as little trees because of this tying.

"All the buds were pinched off the vines except from the two joints next below each wire. Two arms were allowed to grow from these joints, extending in each direction along the wire. The central bud was pinched above the top wire.

Over 10 Pounds of Grapes per Vine

"In February, 1924, the vines were pruned to bear a crop of 10 pounds of grapes to the vine on an average. On weak vines were left three or four buds and on the strong ones seven to nine buds; and most of them were strong. The result was a fine crop of marketable grapes averaging 10½ pounds to the bearing vine. One extra good vine produced 20 pounds.

"These grapes were sold to a buyer at 15 cents per basket. The buyer gathered them and sold them at 25, 30, and 35 cents per basket, and the

FOR TEN YEARS-DEPENDABLE

Exceptional dependability has been a characteristic of Dodge Brothers Motor Car since the day the first of these sturdy cars was marketed.

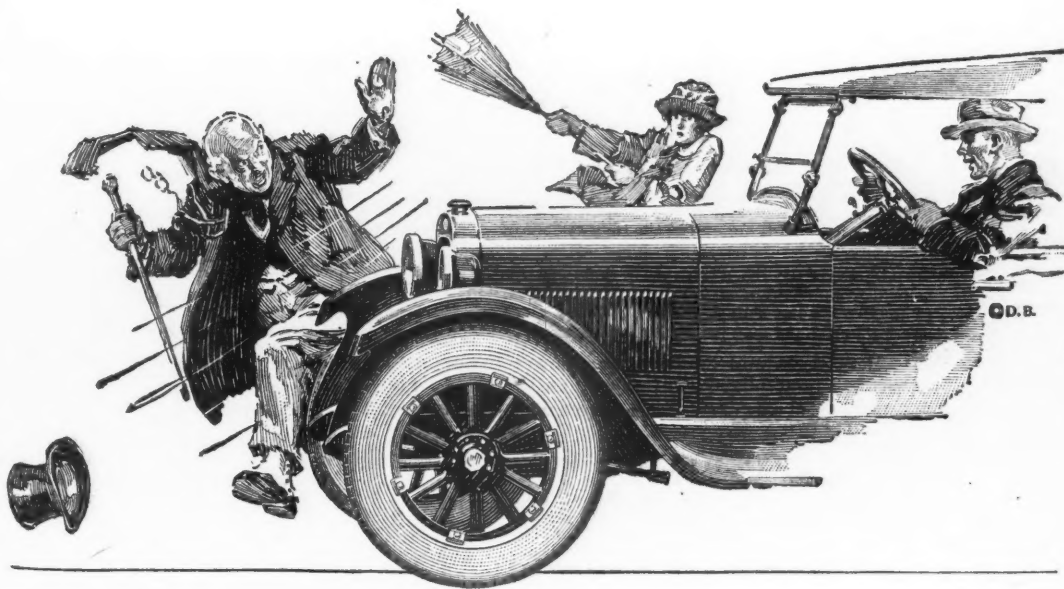
Not once in a decade has it failed to uphold and enhance its reputation for faithful performance.

The reason for its consistent goodness and continued betterment points directly back to the ideals of the founders.

Instead of fluctuating between an endless series of annual models, they determined to concentrate on the perfection of a single chassis.

Dodge Brothers Motor Car today is the embodiment of that ideal—an ideal that will endure as long as the institution itself.

DODGE BROTHERS DETROIT
DODGE BROTHERS (CANADA) LIMITED
WALKERVILLE, ONTARIO



total crop was 2525 five-pound baskets produced by 1213 vines, as 126 vines were too weak to bear. The last grapes were picked September 21 and were in excellent condition, bringing the highest price.

"On September 25 the vineyard was sowed in wheat with a drill, and is clean as a street and a marvel of beauty. It would be worth the time and trouble of anyone to come and see it.

"It has been my good fortune to have the pleasure of sampling the grapes from this vineyard occasionally during the entire fruiting season, and every time I have reveled in the luscious sweetness of this combination

of nectar and ambrosia, I have said in my heart,

"No wonder the gods would fain feast too,

On the fruit of the vine in fair Fairview!"

The Grape Berry Moth

ACCORDING to Dominion of Canada entomologists, the grape berry moth is becoming more and more serious each season in the Niagara fruit belt. The caterpillars are dark greenish or purplish worms, about three-eighths of an inch long, and they feed on the newly set fruit, tying the berries together by the webs they

spin. A later generation of worms feeds inside the berries, passing from berry to berry and tying them together with a few silken threads. Infested berries are absolutely worthless.

The insect can be controlled by spraying with arsenate of lead one and one-half pounds, soap one pound, and Bordeaux mixture 40 gallons. The first spray should be applied immediately after the blossoms fall and the second about the time the grape berries are beginning to touch each other. It is essential that all the grape berries be thoroughly covered with the spray mixture. Short rods and upturned nozzles are necessary for effective spraying.

The Editor's Mail Box

For Apples

NOW IS THE TIME TO APPLY NITRATE OF SODA

2 pounds to 10 pounds per tree
according to age and condition

University of Illinois Circ. No. 233 says:

"It has been amply demonstrated that nitrogen is usually the controlling factor in Apple production.

"Among the more strictly commercial fertilizers mentioned, Nitrate of Soda has come into the widest use for orchard purposes and has sufficiently proved its value in many experimental and commercial orchards to warrant a rather general recommendation of its use in unproductive apple orchards."

Missouri State Fruit Experiment Station Fruit Notes No. 9 says:

"For immediate results there is probably nothing that will excel Nitrate of Soda in the sod orchard. The standard recommendation is five pounds for a mature tree which can be increased or decreased to suit conditions.

"In many cases this chemical has shown itself to be the only one that is of direct assistance to the tree."

Arkansas Experiment Station Bulletin No. 181 says:

"The yield of apples has been materially increased by the timely use of quickly available nitrogen.

"The best results have been obtained by using about 2½ pounds of Nitrate of Soda per average tree for early application; and about the same amount for the June drop application.

"Nearly the same results have been had, however, by using 5 lbs. at one application and applying it early."

From New Hampshire College Experiment Station Technical Bulletin:

"It is also well known that nitrogenous fertilizers, especially the more readily available forms such as Nitrate of Soda, will bring about increased growth of the trees."

Director McGee of the Delaware Experiment Station says:

"These studies verify the results which have been obtained in other states that nitrogen is the limiting factor in production of apples and peaches."

Maryland Experiment Station Bulletin says:

"Of the three materials, Nitrate of Soda or some other quick acting nitrogenous material is most likely to give direct benefit."

Ohio Agricultural Experiment Station Bulletin says:

"Quickly available nitrogen is clearly the determining element in successful orchard fertilization on thin, poor upland soils such as abound in the hilly regions of southern Ohio."

"The addition of 2½ lbs. of Nitrate of Soda per tree to the regular application of 2½ lbs. Nitrate, 5 lbs. Phosphate and 2½ lbs. Potash per tree gave a gain of 24 barrels of apples per acre per year."

Peaches, Pears and Cherries respond
equally well.

This is but a small part of the evidence from undisputed authorities that

IT PAYS TO USE
NITRATE OF SODA
and to use it liberally early in the Spring

If you wish to have our Bulletins on the use of
Nitrate of Soda, put your address on the coupon
and mail it to this office.

Chilean Nitrate of Soda — Educational Bureau
Dr. William S. Myers, Director, 25 Madison Avenue, New York

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Tree Trunks Do Not Stretch

Editor, AMERICAN FRUIT GROWER MAGAZINE: I have a young orchard planted last spring and I want to form the framework of the trees. How high should I leave the branches from the ground so that when the trees are full grown the framework branches will be the right height from the ground? This point is giving me considerable worry and I should appreciate your opinion.—R. E. L., Oregon.

ANSWER: Your question is a good one and involves an important point in plant physiology. Fortunately for you, the problem is not as difficult as you have apparently thought.

The trunks and branches of trees do not stretch in length. While the shoots are very young and succulent, there is a slight stretching, but as soon as the tissues become firm, this stops. After that, all new extensions in growth are made at the ends of the branches, and the early formed branches merely increase in thickness.

You can rest assured, therefore, that the framework of your trees will remain at the same distance from the ground you leave it when forming the head, except for the increase in thickness of the branches which takes place.

Cultivate and Fertilize

Editor, AMERICAN FRUIT GROWER MAGAZINE: I set out some apple trees two years ago, but they have made practically no growth. I set them in sod. Would it help to break up the ground and put poultry manure around them? The trees have been sprayed and look healthy.—J. J. M., Iowa.

ANSWER: The poor growth of your trees has no doubt been due to the lack of cultivation and to the competition of the grass for moisture and plant food.

I am sure that if you will apply some poultry manure or any other kind of manure and work it in and keep your trees cultivated during the early part of the summer, you will find a marked difference in the growth. In using poultry manure, be sure not to use it too heavily, as it is very rich and will hurt your trees if used in too large quantity.

In case you do not have sufficient manure to fertilize all your trees, I suggest that you use nitrate of soda or sulphate of ammonia. Directions for the use of these were given in the March issue.

Whole Root or Piece Root Apple Trees

Editor, AMERICAN FRUIT GROWER MAGAZINE: Please tell me what you think about piece root apple trees; whether they will be as long-lived as whole root trees. Also if they will bear as soon and produce as much fruit.—C. E. D., Illinois.

ANSWER: Piece root apple trees are the result of cutting the seedling roots into several small pieces and using each of the pieces for making a tree. Some nurserymen make a big talking point about whole root and piece root trees. The facts are that there is no such thing as a whole root tree. Some of the root is always lost when the seedling is taken up. Furthermore, the root is weakened by removal.

The larger the root, the better growth you will get early in the life of the tree. However, under good conditions, a tree made from a small root would probably prove as good in time as a tree made from a larger root. Everything considered, I believe that it is advisable to use fairly large pieces of root for grafting apple trees. Most commonly the roots are cut into pieces three or four inches in length.

Formaldehyde Injurious

Editor, AMERICAN FRUIT GROWER MAGAZINE: I would like to know if cloth soaked with undiluted formaldehyde and bound around my five-year-old pear trees would kill them. I have tried it on two of the trees, and I was advised to find out

more about it. There is some trouble with the bark on the trees below where the limbs come out.—G. C. B., New York.

ANSWER: I should hesitate very much to place cloth soaked with formaldehyde around pear trees. Formaldehyde is quite injurious to plant life, and I rather think you would seriously damage some trees at least by using it. I think there are other materials which would be as effective against bark diseases as formaldehyde and which at the same time would not injure the bark.

I presume that you have reference to disease cankers on the bark, and I suggest that instead of putting formaldehyde on the trees, you trim out the cankers carefully with a sharp knife or scraper and then paint the wounds with some liquid like copper sulphate solution or strong lime-sulphur solution. A mixture of two-thirds coal tar and one-third creosote is also good.

Eradication of Black Ants

Editor, AMERICAN FRUIT GROWER MAGAZINE: Please tell me how to get rid of black ants in my orchard.—C. K., Kansas.

ANSWER: About the best way to rid your orchard of black ants is to use calcium cyanide. Since the ants live in mounds, it is simply necessary to find these mounds. You can then control them by the proper treatment of the mounds.

For small mounds, make a hole eight to 10 inches in depth in the center of the mound near the entrance, and place about half an ounce of calcium cyanide flakes in it. For large mounds, from two to four holes may be required.

A county agent in Kansas last season obtained excellent results by making a number of small holes in the mounds with an auger. Of course, in such a case a smaller amount of cyanide would be placed in each hole.

It is desirable to have holes with clean sides so that the gas will easily penetrate to all parts of the nest. Augers give best results in making the holes.

The soil should be somewhat moist when the treatment is applied. A chemical reaction occurs between the cyanide and water, which causes the evolution of the poisonous gas that kills the ants. If after 10 days there are still any live ants, a second treatment should be applied.

Standard or Dwarf Apple Trees

Editor, AMERICAN FRUIT GROWER MAGAZINE: I am thinking of setting a young orchard. Which would you advise to set, standard apple trees at a distance of 35 by 35 feet or dwarf trees at a distance of 20 by 20 feet?—P. C. S., Indiana.

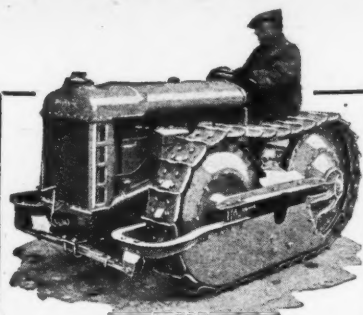
ANSWER: In regard to the orchard which you are planning to start, by all means use standard trees. They will give you more satisfactory results in the long run. It is true that the dwarfs may come into bearing somewhat earlier than the standards, but over a period of years, the standards will give you better yields per given unit of ground, and, furthermore, the standard trees will live longer than the dwarf trees, as a rule.

Regarding distance, 35 by 35 feet is plenty close for standard apples of some varieties. Quite a few commercial growers are setting large-growing standard trees 40 by 40 feet, and some are setting them at even greater distances.

Blister Canker on Pear Trees

Editor, AMERICAN FRUIT GROWER MAGAZINE: Please advise me how to treat blister canker on a Kieffer pear tree. I am very anxious to save the tree.—G. F. O., Illinois.

ANSWER: In treating blister canker on pear trees, you should first remove all wood that is infected.



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Only in the TRACKPULL are you assured Fordson crawler traction without differential strain. Two independently operating, multiple disc clutches provide the TRACKPULL-Equipped Fordson with its square turning ability.

This feature, plus the greater traction of 900 to 1000 square inches of ground contact, and the decreased height and width, makes the TRACKPULL-Equipped Fordson an ideal orchard tractor.

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53 W. Jackson Blvd., Chicago

Use MYERS SPRAY PUMPS the Year Round

For Spraying Cold Water, Painting, Whitewashing & Disinfecting

ORCHARD and vineyard, truck patch and citrus grove, cotton and tobacco, vines, shrubs and flowers must be sprayed. Barns, sheds, poultry and hog houses, fences, walls and outbuildings must be whitewashed, painted and disinfected. You can do any or all of these things quickly, economically and efficiently with a MYERS Spray Pump. There is a MYERS for every purpose, and each the best of its kind.

MYERS Spray Pumps handle with equal facility insecticides, disinfectants, whitewash or paints. Hand Pumps with easy operating cog gear handle—self-lubricating. Power Pumps with enclosed working parts and automatic pressure control give powerful penetrating spray that reaches every leaf and blossom, every nook and corner.

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MAINTENANCE for over fifty years of MYERS MONOR-BILT PUMPS FOR EVERY PURPOSE. MYERS SYSTEMS FOR HOME FARM AND FACTORY. HAY AND GRAIN UNLOADING TOOLS. FARM AND GARAGE DOOR HANGERS.

Illustration of a tractor with a pump.

Cut off any branches that show infection, and it is also well to trim the loose, dead bark and wood out of any cankers that exist, cutting deep enough to get below the discolored and diseased tissue.

It is a good thing to treat the wounds with some disinfectant after the pruning. It is also well to sterilize your pruning tools occasionally in order to prevent spread of the infection. A corrosive sublimate solution is good for disinfecting tools, and a good material for covering the wounds is a mixture of two-thirds coal tar and one-third creosote. This mixture serves as a covering and also as a disinfectant.

It is very difficult to eliminate blister canker when a tree is badly affected with it. However, by using the treatment described, you should be able to lengthen the life of your tree.

White Lead for Pruning Wounds

Editor, AMERICAN FRUIT GROWER MAGAZINE: In answer to your recent editorial, I think your magazine is all right and I cannot see where you could improve it in the least.

Will you please tell me if pure linseed oil and pure white lead will injure young peach trees.—J. E., Indiana.

ANSWER: Please accept our thanks for your recent letter. We are pleased to know that you like the magazine.

It will do no damage to apply linseed oil and pure white lead to wounds on peach trees caused by broken limbs or by pruning; in fact, it will be a good thing to cover the larger wounds with thick white lead paint. However, it is of no advantage to cover small wounds with paint, as they soon heal over. In applying the paint, be very careful not to place any on the bark surrounding the wound, and be sure to make the paint somewhat thick so that the oil will not spread to the bark.

Under no circumstances apply any kind of paint or grease to the bark of peach trees or any other kind of trees. Such materials close the pores in the bark and destroy the bark. While such treatment may not destroy the trees, it will most certainly injure them.

Growing Seedlings From Peach Seeds

Editor, AMERICAN FRUIT GROWER MAGAZINE: I saved several bushels of peach seeds last summer and want to grow seedlings for budding this summer. Please tell me how to handle the seeds for best results.—A. C. K., Arkansas.

ANSWER: Peach seeds are handled in various ways. Many nurserymen plant the seeds in late summer or fall in rows where the trees are to be grown. Well-drained, deep, rich, loose soil is essential. Avoid clay and heavy, sandy soils. The seeds should be planted about two inches deep and seven to eight inches apart in rows that are three and one-half to four feet apart. The rows are often ridged in the fall and worked down level in the spring. Moisture and freezing will crack the pits and will put them in good condition for sprouting in the spring.

Some nurserymen stratify the seeds in the fall. A well-drained location is necessary. A pit 12 to 15 inches deep and four to six feet wide is dug. The seeds are either mixed with sand or placed in the pit in alternate layers with sand. They should be covered with six to eight inches of soil or enough to prevent drying out but not enough to prevent freezing of the seeds. In the spring the seeds are planted outside, as above described.

Cedar Rust Infects Red Cedars Only

Editor, AMERICAN FRUIT GROWER MAGAZINE: Does red cedar rust occur only on red cedars or does it occur on the white cedar (Arbor Vitae) also?—H. K., Ohio.

ANSWER: The disease commonly known as red cedar rust occurs on the red cedar only. No rust occurs on the true white cedar or Arbor Vitae so far as I am aware.

FACTS ABOUT A FAMOUS FAMILY



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What battery costs the least?

The one sound basis for judging a battery is cost — not just original price, but final cost. What battery will do its appointed tasks in your car for the least expenditure of your dollars? The answer to that question has been found by millions of drivers to be EXIDE. Because: the price is reasonable to start with; the repair bills are usually little or nothing; the length of service is notably long.

Long before you sound "taps" on an Exide it will have won your enthusiasm by its economy. Start economizing by driving to the nearest Exide Service Station. You can also get Exide Radio Batteries at our service stations and at radio dealers.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

EXIDES WORK IN MINES

Rugged Exide-Ironclad Batteries propel locomotives that haul coal in the underground passages of mines—one of the many important parts that Exides play in the daily life of the nation.

35-Year-Old Orchard Produces Its Largest Crop

A THIRTY-FIVE-YEAR old orchard of the Massachusetts Agricultural College in Amherst, Mass., in 1924 bore its record crop, 336.2 barrels from 60 trees. Dr. J. K. Shaw, the pomologist who devised the nursery stock identification system, and who has had charge of this experiment in the past four years, considers the 1924 crop a highly satisfactory yield.

Originally this block of trees was a potash experiment, set out by the late Dr. C. A. Goessmann in 1890. At that time potash was considered among plant foods as the chief determinant of the size of fruit crops. High potash fertilizers were used for many years. The five plots, each containing three Rhode Island Greening, Roxbury Russet, Baldwin, and Gravenstein trees, were treated with the following per-acre dressings in their first three decades; plot one got 10 tons of manure; plot two got 2000 pounds of wood ashes; plot three, a check plot, got nothing; plot four, 600 pounds of ground bone and 200 of muriate of potash; and plot five had 600 pounds of ground bone and 400 of low grade sulphate of potash.

The orchard lay on the blustery side of a high hill, over which the sun shone only after it had been up for an hour or two hours. The trees were 30 by 40 feet apart on an acre and one-half of ground. The soil was only fair, being a medium loam of moderate fertility, and it put a premium on good soil management.

It has been variously treated. From 1889 to 1893 it was inter-cropped. From 1894 to 1902 it was in sod and the grass was removed. Between 1902 and 1910 it had a sod mulch, but from 1911 to 1920 it was strip-cultivated.

The trunk growth during this period was high, and, in a sense, made possible the record yield of the past season. As is now fairly well known, potash has little to do with the size of a fruit crop.

Nearly a decade ago, horticulturists first put forward this support of nitrogen as an orchard feeder, and after some trials this old experiment orchard was fertilized on a different system. In 1921 and in following years it has received the following per-acre doses; plot one, four tons of manure; plot two, 1000 pounds of wood ashes and 300 pounds of nitrate of soda; plot three, as before, nothing; plot four, 100 pounds of muriate of potash, 150 of acid phosphate and 300 pounds of nitrate of soda; plot five, 100 pounds of sulphate of potash, 150 of acid phosphate and 300 of nitrate of soda. It has been strip-cultivated and cover-cropped.

The consequences of this treatment appear in the following tables on the set of fruit spurs and on the average per cent of bloom during 1923 and 1924:

AVERAGE PER CENT OF SPUR SET PER PLOT IN 1923-24.

| R.I.G. | Rox. R. | Bald. | Grav. | |
|--------|---------|-------|-------|---------------|
| 67 | 52 | 77 | 88 | 1923 } Plot 1 |
| 44 | 39 | 78 | 61 | 1924 } |
| 78 | 86 | 90 | 86 | 1923 } Plot 2 |
| 53 | 48 | 57 | 31 | 1924 } |
| 44 | 27 | 88 | ... | 1923 } Plot 3 |
| 25 | 37 | 66 | 33 | 1924 } |
| 83 | 48 | 62 | 78 | 1923 } Plot 4 |
| 26 | 26 | 50 | 40 | 1924 } |
| 76 | 60 | 93 | 73 | 1923 } Plot 5 |
| 31 | 49 | 86 | 47 | 1924 } |

Note the consistently higher percentage in plots one and five.

The yields from plots one and five in the past three years have consistently argued for treatments like

orchard when planted on New England soils. Not only was their bulk small, but they resembled the far pasture produce known as the Lord's little apples.

The plot yields for 1924 were as follows: plot one, 98.1 barrels; plot two, 65.8 barrels; plot three, only 22 barrels; plot four, 65.4 barrels; and plot five, 86.2 barrels.

Dr. Shaw further notes that the Baldwins have yielded their best from the commercial fertilizers, and the Greenings, Russets and Gravensteins from manure. Of the two fertilizer combinations with which the Baldwins were treated, the mixture containing the sulphate of potash was more productive than that with the muriate of potash. This distinction between forms of potash may not, however, apply generally.

Care of Budded Trees

NURSERY trees budded last fall will require careful attention until next fall, according to Prof. M. J. Heppner of the University of California. He gives the following suggestions regarding care of budded stock:

"The original seedlings should, by this time, have been topped off about one-quarter to one-half inch above the bud inserted in the fall. This topping causes a heavy growth to be thrown out from the stock, and in order to give the growing bud a chance to make all the growth it should make, all growth with the exception of that from the bud itself should be removed. This will necessitate going through the nursery several times and removing this undesirable growth. In order to divert all the tree energy into the growing bud, it is best to remove the suckers as fast as they form. The stock will continue to throw out this growth until the growth from the inserted bud is large enough to take care of all food sent up from the roots. Incidentally, as the shoot grows the trunk is being shaded, which will check growth.

"The nursery soil should be carefully watched and if found deficient in soil moisture, water should be applied whenever necessary. Owing to the dry year, double care should be taken to keep the moisture content high enough to give the trees proper growing conditions.

"Growers raising trees which are attacked by red spiders or other pests should watch the trees and take the necessary precautions for keeping them clean. As a rule, the red spiders give more trouble than the other pests. If the trees become infested, sulphur should be applied, either as a dust or in any of the forms generally recommended for spider control.

"In order to keep weeds down, the cultivator should be used at frequent intervals. Growers following the above suggestions should have good sized, well matured trees at the end of the season, provided soil and climatic conditions are satisfactory."

No Quarantine Against Oriental Hag Moth

AS A RESULT of a recent hearing, and of information obtained from interested parties, the Federal Horticultural Board will not recommend a Federal quarantine against the Oriental hag moth, which now is present in a restricted area in eastern Massachusetts. The insect was discovered in Massachusetts in 1906 and appears to have been imported from Japan on nursery stock. Its spread has been slow, and apparently it can be held

AVERAGE PER CENT OF BLOOM PER PLOT IN 1923-24.

| R. I. G. | | Rox. R. | | Bald. | | Grav. | | |
|----------|------|---------|------|-------|------|-------|------|-------------|
| 1923 | 1924 | 1923 | 1924 | 1923 | 1924 | 1923 | 1924 | |
| 60 | 83 | 65 | 77 | 40 | 28 | 25 | 85 |Plot 1 |
| 60 | 70 | 72 | 60 | 45 | 13 | 13 | 80 |Plot 2 |
| 17 | 37 | 20 | 43 | 6 | 6 | 1 | 77 |Plot 3 |
| 57 | 47 | 65 | 55 | 7 | 22 | 42 | 80 |Plot 4 |
| 58 | 67 | 65 | 60 | 8 | 40 | 8 | 80 |Plot 5 |

those used on them. The niggardly results from plot three which yielded only 22 of the 336 barrels of the whole orchard last year leave no doubt as to the wisdom of fertilizing a bearing

in check with arsenical sprays. It feeds on a number of trees but appears to be of minor importance. For these reasons a Federal quarantine does not seem justified.

Developments in the Use of Oil Emulsions

(Continued from page 4)

addition of Bordeaux mixture increases the adhesiveness. Such mixtures may sometimes prove so adhesive that they are a disadvantage on the fruits.

All of the emulsions have shown good spreading qualities, no important difference being noted between the boiled and cold-mixed preparations. The emulsions may be of value as spreaders when used in summer sprays on the apple at the rate of one and one-half to two gallons to the 200-gallon tank.

Cold-mixed emulsions have shown poor stability and should be made up only as needed. The boiled emulsion is thoroughly stable. Some of the entomologists reported difficulty in handling emulsions shipped in a frozen condition.

The boiled emulsion mixes satisfactorily with Bordeaux, arsenate of lead, and nicotine, but not with lime-sulphur. The cold-mixed emulsion mixes with lime-sulphur as well as with other sprays.

Insects Against Which Oil Emulsions Are Effective

The report summarizes briefly the information obtained from different sections in the treatment of insects with oil emulsions. A two per cent emulsion will control San Jose scale but a three per cent emulsion is recommended for heavy infestations. In British Columbia oyster shell scale was controlled effectively with a two per cent emulsion, but the same insect was not satisfactorily controlled in Illinois and Indiana with two and three per cent emulsions. Green apple aphids were controlled with a two per cent emulsion in several states, especially when applied just as the tips of the buds were showing green. Fairly good results were obtained in treating rosy apple aphids with a two per cent emulsion. Aphis eggs were not destroyed satisfactorily by the oil emulsions. Nicotine sulphate was found superior to oil emulsions for treating leaf hoppers in Arkansas.

Satisfactory results were obtained from oil emulsions in treating the common leaf roller and the red-banded leaf roller, but not the bud moth or the oblique-banded leaf roller. Armored scales and white flies were controlled on citrus fruits, but the emulsions failed to control the cottony cushion scale or mealy bugs. Varying results were reported in the control of several other scale insects.

Rust mites were only partially controlled with oil emulsions, and blister mites were better controlled with lime-sulphur than with oil emulsions. The red spider was better controlled with oil emulsions than with lime-sulphur solution. The European red mite was controlled fairly well with oil emulsion. In Illinois, red bug nymphs were controlled satisfactorily with a two per cent emulsion. It was reported that in Georgia the oriental fruit moth was controlled with one-fourth of one per cent emulsion, but this result was obtained in one season only and cannot be taken as final.

Use of Bordeaux-Oil Combination

Various entomologists reported satisfactory results from the Bordeaux-oil combination in controlling melanose, scab, and ammoniation of citrus fruits, cherry leaf spot, apple scab, blotch, and bitter rot. The results appeared to be favorable in the treatment of peach leaf curl, but no positive results were reported.

Use on Trees When in Foliage

Oil emulsions are not generally recommended except as dormant sprays. Exceptions are made when San Jose scale is serious and has not been sufficiently controlled by the dormant treatment. In some cases two or three per cent emulsions have been used effectively in summer against red spider and other insects. Severe injury to peaches was reported from several states in attempts to spray this fruit with emulsions during the

summer. The apple has shown only slight and insignificant injury, except when the temperature has been above 90 degrees Fahrenheit. Cherries, pears, plums, gooseberries, grapes, blackberries, roses, walnuts, and maples, have been sprayed with a two per cent emulsion during the growing season without injury.

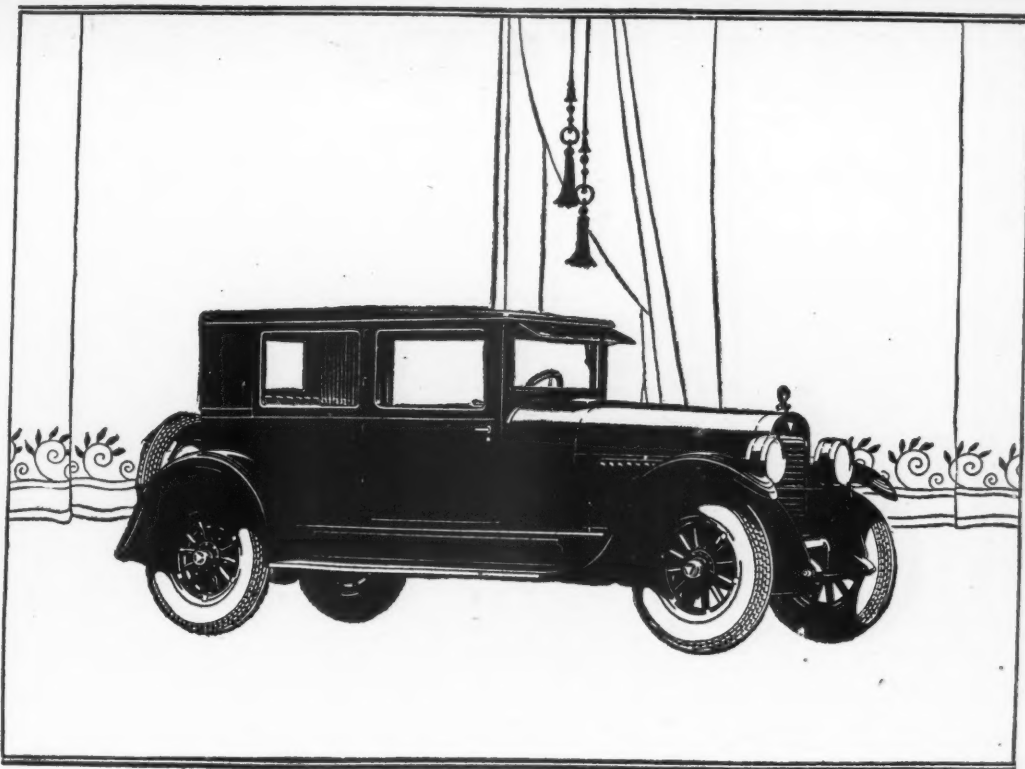
The United States Department of Agriculture and a large number of experiment stations are investigating oil emulsions and there is little doubt but what we shall have more complete information on the subject within a reasonable time. Oil emulsions can be made satisfactorily at home, but it is very important that the proper materials be used and that the proper methods be employed in the preparation and application of the materials.

Currant Aphids

APHIDS sometimes cause serious damage to currants early in the spring. They may be controlled by dusts or sprays containing nicotine, the fumes of which are toxic to insects of this class. One application will often be sufficient if made when the new terminal leaves are about half an inch in diameter. At this time the insects are just hatching out and are particularly susceptible to nicotine fumes and there is little foliage to protect them from the spray material or dust. This and other information about the insect is contained in Bulletin 517 of the New York State Agricultural Experiment Station at Geneva, written by P. J. Parrott and S. W. Harman.

The experiments reported in the bulletin are part of a series of investigations whose object it is to determine the relative efficiency of sprays and dusts in combating insects of fruits and vegetables. According to the bulletin, liquid sprays containing one pint of nicotine sulphate to 100 gallons of spray mixture, and dust mixtures containing from one to two per cent of nicotine, proved about equally effective against currant aphids.

The following is recommended as a safe and efficient spray for currant aphids: Nicotine sulphate one pint, soap five pounds, and water 100 gallons. The material should be applied under high pressure and care should be taken to wet all parts of the foliage thoroughly, including the under surfaces of the leaves.



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Trees "A" and "C" were planted in blasted holes. Trees "B" and "D" were planted in unblasted holes. The trees are all of the same age. Notice results both above and below ground. Made from actual photograph.

Planting trees with dynamite does this for your orchard

FARMERS, ranchers and orchardists are doing more and more tree-planting with dynamite because blasting tree-holes makes more plant food available for the roots; creates a porous subsoil for the absorption and retention of moisture—an insurance against loss of trees during dry seasons; and destroys fungus, nematode and other plant diseases.

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Poison With A Peerless

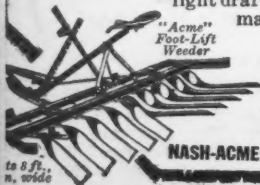
Try Dust Insecticide for codling moths and curculio. Easy to apply and effective in its work. Use a **PEERLESS HAND DUSTER** and note how convenient it is. The gears are scientifically constructed to produce a maximum amount of power with minimum effort. Will distribute any insecticide in dust form. Feed can be regulated to any density required. Can be used on plants, bushes and trees with equal force.

Write for a circular and name of nearest dealer.

Peerless Dust Gun Co.
1600 E. 24th St. Cleveland, Ohio

These Weeder Blades Cut Like a Knife

The "Acme" Weeder has blades which cut through weeds instead of dodging around them. The only Weeder we have ever seen that will clean out a patch of quack grass. An excellent light draft tool for grove and orchard cultivation. Strongly made to stand hard usage.



You can adjust the blades at any desired depth or raise them for clearing away trash. Guards protect the trees from possible injury.

Write for free booklet, "Digging Crops from Better Tillage". It describes our complete line of "Acme" Tillage Tools for orchard, field and garden use.

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With the Co-Ops.

BECAUSE of difficulties in the past in tying up liquid capital in fixed assets, the Yakima Fruit Growers' Association is reorganizing its financial methods. Under the new plan there is to be a fixed asset fund, an equipment fund, a pre-harvest advance fund, and a general fund.

The fixed asset fund will be raised by the sale of bonds from time to time as needs develop. The money will be used for construction and equipment purposes. A bond issue of \$35,000 is at present being offered for the enlargement of ice-making facilities in one plant.

The equipment fund will be used for semi-permanent equipment, such as graders, sizers, trucks, machines, etc., and will be raised through the annual budget by a fixed assessment per box. Expenditures from each year's fund are to be limited to the amount raised.

The pre-harvest advance fund will be used to make advances to growers. Growers who wish advances will give the association interest bearing notes. The association will borrow the money from bankers on its own notes, giving the growers' notes as collateral. The grower will be charged a slightly higher rate than the association pays in order to cover overhead costs and to meet possible losses. In the event a grower should have a delinquent account at the close of the season, he will be required to furnish a note to be handled through this fund, as it is planned to liquidate all growers' accounts annually.

The general operating fund will be raised from such sources as ice manufacture, storage, handling of supplies, and the handling and marketing of fruit. This will be the main account and will be retained in liquid form. In effect, the other funds have been created for the protection of this fund. Accruals will be carried forward monthly. Thus, it will be possible to show the exact condition of assets and liabilities each month. Under the old system it was impossible to make an accurate, intelligible statement until the close of the fiscal year in June.

The new method of financing has the approval of the association bankers. Other features of the plan consist of the sale of preferred stock and the creation of a larger liquid capital fund. These will be explained in a future statement of the association.

THE SAN DIEGO County Fruit Exchange, comprising seven local associations in San Diego County, Calif., has recently been organized as a new sub-exchange of the California Fruit Growers' Exchange. The officers are John E. Boal, President; W. W. Prior, Vice-President; A. D. Olney, Secretary, and R. C. Allen, Treasurer. Mr. Allen will also serve as representative on the board of the California Fruit Growers' Exchange. A. L. Monk, who has had extensive experience in co-operative management, has been employed as manager.

THE SOWEGA Melon Growers' Association and the Georgia Sweet Potato Growers' Association of Adel and Valdosta, Ga., respectively, have developed a joint plan by means of which the affairs of both organizations will be administered through the officers and headquarters of the melon association. This step is being taken in the interests of economy and will, it is claimed, reduce the overhead materially. Neither association will lose

its identity as an organization. Thus, the valuable features of the commodity idea will be retained.

THE FIRST strictly co-operative advertising copy is said to have appeared in general magazines in 1915. During that year the total amount spent for advertising purposes was \$10,800. The expenditures have steadily increased. In 1923 a total of \$2,885,000 was spent by co-operative associations in magazine advertising.

THE ST. JOSEPH-MICHIGAN Fruit Association of St. Joseph, Mich., handled 288 cars of grapes and 10 cars of pears during 1924. These fruits were sold for \$193,800. The grapes were sold in 156 daily pools, extending from September 20 to October 29. The largest number of pools for any one day was 12 for October 6. The average price per ton for the season ranged from \$51.15 for Concord to \$78.58 for Moore's Early. At the close of the season the association had a balance of \$11,127 in its surplus account, over \$6000 of which was profit accumulated during 1924.

THE SOUTHERN Michigan Fruit Association of Lawton, Mich., has had a long and successful experience. The association now has 441 members. Of these, 400 have recently signed a three-year non-cancellable contract. The membership was increased by 88 during 1924, and it is expected that 50 additional members will be obtained before the next shipping season arrives.

In 1924, the association shipped 911 cars of grapes, which sold for \$615,098. Freight, commissions, detention, demurrage, insurance, etc., cost the association \$63,132. A total of \$55,198 was set aside for administrative expenses. Of this amount only \$15,994 was actually used for expenses, and the remaining \$39,204 was returned to the growers. At the close of the season the growers had received approximately 87 per cent of the delivered value of the products, or 97.1 per cent of the f.o.b. shipping point value. The association has been in successful operation since 1899 and has had during that time only three different managers.

THE REPORT of the Federated Fruit and Vegetable Growers, Inc., states that a total of 34,104 cars of products were handled in 1924. The proportions of commodities handled were as follows: Potatoes, 33.5 per cent; apples, pears, peaches and allied fruits, 25.75 per cent; other fruits and vegetables, 40.75 per cent. Products were handled from 39 states. Of the shipments, 88 per cent were sold on an f.o.b. basis, 5.4 per cent through terminal fruit auctions, and 6.6 at private sale after arrival.

Carlot sales were made in 1196 cities and towns in 47 states, compared with 772 cities and towns in 46 states in 1923. Carlot sales were made in a number of small towns which had never before purchased in carlot quantities. Sales were also made in England, Scandinavia, Cuba, South America, and Mexico.

The shipments fell considerably below the estimates of 50,000 to 60,000 cars made early in the season. Adverse weather conditions in some sections were responsible in part for this decrease. The loss of important tonnage in Michigan, Ohio, Maine, and other sections also played a part. The signing up of the Minnesota potato

tonnage offset these decreases to a large extent.

The preliminary report states that the official annual report, which will be submitted at the annual meeting to be held soon in Atlanta, Ga., will show increases in the surplus and revolving accounts for the year 1924.

THE TEXAS Farm Bureau Fig Growers' Association is planning to construct a large preserving plant at Alvin, Tex., to take care of about 1200 acres of figs. The plant will cost \$50,000, it is estimated. Definite plans have also been developed for a preserving plant at Burr, Tex., upon which work will be started at once. The association controls 2000 acres of bearing figs and has floated bonds for the construction of four plants which will cost approximately \$100,000. The other two plants are to be located at Ganado and Bay City.

DURING 1924 the Sebastopol Apple Growers' Union of Sebastopol, Calif., shipped a total of 409,519 boxes of apples. More than three-fourths of the shipments were Gravensteins. The shipments were made from 10 stations in the vicinity of Sebastopol. The association was organized in 1910 and has been marketing apples since 1911. The shipments of 1924 were the smallest during the last four years, due to adverse weather conditions last spring. The largest shipments during the last four years were made in 1923, when a total of 1,051,765 boxes were marketed. The association now has a net worth of \$226,525 and fixed assets amounting to \$187,999, less reserve for depreciation.

THE RESULTS of a recent suit brought by the Minnesota Potato Exchange is of interest to fruit growers. The co-operative law of Minnesota, in keeping with the co-operative laws of many states, authorizes an association to recover \$500 from a dealer who knowingly induces an association member to breach his contract. In addition, it provides that a dealer is subject to a fine of \$500. In deciding the case, the court stated that dealers who innocently purchased produce under the circumstances were not subject to fines or civil suits, but it held the provisions valid when malicious attempts were made by dealers to buy the produce of a member of a co-operative association.

THE EUGENE Fruit Growers' Association of Eugene, Ore., has recently issued a report for its operations during 1924. On December 31 the association had 1584 members, having increased its number by 75 during the year. The amount of stock outstanding was \$183,970. Total sales during the year, including products marketed and supplies sold to growers, amounted to \$1,254,769.58. Total expenditures for labor and salaries amounted to \$215,098.17. The plant and equipment were valued at \$318,867.09. Inventories of merchandise and supplies amounted to \$237,534.61.

The products marketed included a long list of fruits and vegetables, and the supplies consisted of a large variety of merchandise.

THE CALIFORNIA Prune and Apricot Growers' Association recently sent out to its members the last payment on the 1924 apricot crop. This payment totaled \$143,000. Three payments were made previously. The final payment varied from about 6.1 cents per pound to about 2.4 cents per pound for Sunsweet of the different grades; from about 2.7 cents to about 2.3 cents for neutrals, and from about 2.8 to about one cent per pound for off-grade apricots.

ACCORDING to reports, a new organization is being formed among growers in the Spokane valley which will handle berries, prunes, pears, and a variety of vegetables. It is expected that arrangements will be made with the Spokane Valley Growers' Union, which now handles the apples of the valley, to market the products. Since

this organization already has a perfected sales organization, it is regarded as a waste of time to build a separate sales service, not to consider the increased overhead of the same. It is planned to have every member furnish a careful estimate of his expected crops so that adequate sales facilities can be provided in advance of the shipping season.

THE SUN-MAID Raisin Growers are taking steps to enforce all contracts and are asking the co-operation of their members to the end that all contracts may be rigidly enforced. The number of disloyal members is said to be small, but the association takes the view that contract breakers

increase the selling expense of loyal members, they reduce the prices for members, and they help to break up co-operative marketing. The rigid enforcement of contracts is held to be only fair to loyal members.

ANNOUNCEMENT is made by the California Walnut Growers' Ass'n, Los Angeles, Calif., that it is now in a position to purchase and retire \$10,000 worth of its bonds. These will be purchased at par and accrued interest from any owners who wish to sell, up to the amount specified.

"I DO NOT know of any formulas of co-operation, I do not know of any contracts that can be formed, I do not

know of any short cut ways, through which you can bring about that internal spirit in men which makes them believe that working together is the wise way to work out their individual and mutual industrial problems. That is a matter of growth; that is a matter of evolution; that is a matter of acquiring step by step out of the abundance of experience."—G. Harold Powell.

The sketch from which the cover of this issue is made was created and lithographed by the Schmidt Lithograph Company of Portland, Ore., for use on one of the handsome menus of the Portland Hotel, Portland, Ore., and we are indebted to them for this sketch.

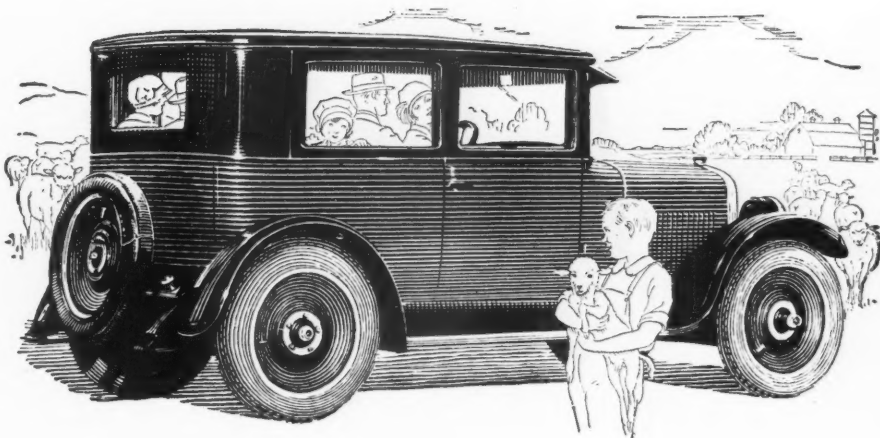
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You must see and drive the new Oakland Coach yourself to appreciate it. Considering both car and price you will agree that here is unmatched value—just the value you have been looking for. = = Five-passenger Fisher Body, big wide doors, one-piece V.V. windshield, Duco finish, powerful, economical, six-cylinder engine, four-wheel brakes, balloon tires—in fact everything you want. = = See your Oakland dealer today. Let him also show you how the General Motors Time Payment Plan will save you money.

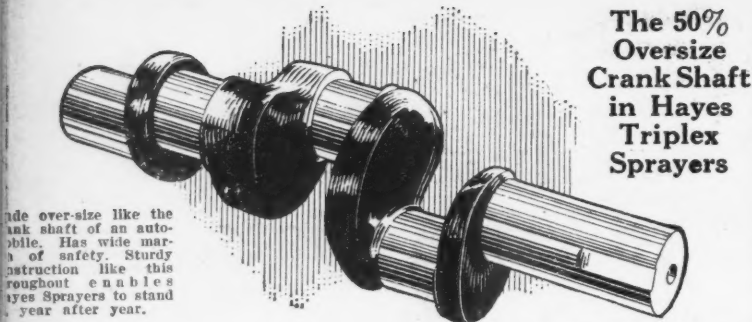
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Built Like a Motor Truck

Buy your Sprayer as you would a truck. Consider the stress and torsion of traveling under heavy load through an orchard. Hayes FRUIT FOG Sprayers are built to take punishment. Parts are made oversize where heaviest strains occur.

As a result, growers with Hayes FRUIT FOG Sprayers get effective 300-pound pressure year after year with minimum service and upkeep needed. Our pump is cast in one piece, with fewer parts, machined or packed joints. Bearings are "take-up-the-wear" type. With all these advantages and over 50 models to choose from, our prices are low.

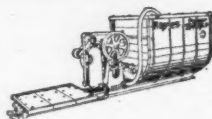
NEW CATALOG

Just off the press, shows latest ideas in profitable, successful spraying. Send for it.

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Makers of full line of Power, Traction and Hand Sprayers, Pumps and Pump Jacks.

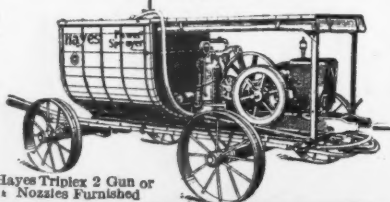


Assemble Your Own Outfit

In comparing prices with Hayes Power Sprayers, remember that we always quote our outfits with complete equipment.

If you wish, however, you can get any Hayes FRUIT FOG Sprayer without equipment, and get FRUIT FOG results at minimum cost.

You can use your own engine, truck, tank, bamboo poles or hose. We particularly recommend, however, that you let us furnish our Hayes high-pressure pump and Fruit Fog Guns.



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HAYES "FRUIT-FOG" SPRAYERS

Kill Aphis

Or you'll pay the penalty in dwarfed, specked fruit and culls. "Black Leaf 40," is the "Old Reliable" for Aphis, Red Bug, Pear Psylla, Thrips and other similar insect pests. Use with other insecticides and make one spraying do double duty.

Recommended by Experiment Stations and Agricultural Colleges everywhere.

Your dealer has "Black Leaf 40" and a FREE complete Spray Chart. If he is out, write us at once.

TOBACCO BY-PRODUCTS & CHEMICAL CORP.
Incorporated
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Spray
Black kills Aphis
Leaf 40
40% Nicotine

Markets and Marketing



THE FOLLOWING report, received from the United States Bureau of Agricultural Economics on March 9, reviews the fruit marketing situation during February and early March:

"Cold storage holdings of apples are relatively light; daily shipments from western states average less than last season, but barreled stock has been moving more rapidly.

"A few leading apple varieties tended upward during the month. Eastern York Imperials advanced 25c-\$1 per barrel in city markets, reaching a range of \$6-\$7. New York Baldwins dropped in Chicago to \$6.75-\$7, strengthening in the East to \$6-\$7. Greenings advanced to a range of \$6.50-\$8. In the Middle West, Extra Fancy Jonathans reached top of \$8.50-\$11 and Ben Davis tended upward at \$5-\$7. Prices were firm in western New York, where A2½-inch Baldwins brought \$6.50 per barrel, f. o. b.

"Northwestern Extra Fancy Winesaps, medium to large, were firm in most city markets around \$3.25-\$4 per box. Closing prices in midwestern cities were \$3.75-\$5 per box for Delicious. Romses weakened slightly to \$3-\$3.75. Washington shipping points quoted Winesaps about steady at \$2.70-\$2.75.

"Reports of cold storage stocks on hand February 1 showed barreled holdings much lighter than last season's and 135,000 barrels below the five-year average. Boxed apple stocks are about 1,000,000 boxes less than average and 4,300,000 lighter than in 1924. Apples in bushel baskets also are in lighter reserve supply. Daily carlot movement of western apples averaged a little over 50 cars during the month, compared with 160 last season. However, barreled apples moved at an average rate of 135 cars, against 100 a day during a corresponding period last year. Early fruit outlook seems fully up to average, with no great amount of winter injury reported.

"Florida strawberries strengthened to 35c-55c, quart basis. The berry season gets into swing at the height of the Louisiana crop the last half of April and reaches its peak with Tennessee and Arkansas stock on the market the last half of May. The early and intermediate acreage is reported short of last season by about 10 per cent."

THE AMERICAN Pomological Society and growers' organizations in general have in the last year or two been boosting increased consumption of fruits. It is interesting to learn that various trade organizations are taking an active interest along the same line. The National League of Commission Merchants in their recent convention at Louisville took action in this regard which is significant.

It seems that the trade interests are seriously concerned by the fact that fruit and vegetable consumption has not kept pace with the increase in population. The board of directors of the league, after an extensive investigation by experts, voted unanimously in favor of a campaign of advertising fruits and vegetables. It is planned to call a national conference of growers' association leaders and trade leaders. Out of this conference, it is hoped, a national fresh fruit advertising association will be developed. It is expected that officers representing the various interests will be chosen at the conference. It is planned to organize the campaign on a three-year basis. The plans call for magazine and newspaper advertising; the amount to be

raised is placed in the neighborhood of about \$500,000. The slogan is to be, "Fresh Fruits and Vegetables—The Defenders of the Nation's Health."

During the proposed conference it is planned to give all persons full opportunity for discussion. The league board is not expecting to govern the conference. It is expected that various committees, each representing a different interest, will have the arrangements in charge.

The objects of the conference, it is said, will be to stimulate greater consumption of fresh fruits and vegetables and to concentrate the entire industry back of the movement. It is believed that with such a subject as increased consumption of perishables, all interests are of one mind and that results can be accomplished which will be helpful to all.

NOTWITHSTANDING the way carefully boxed citrus fruit has received encouragement, the shipment of such fruit in bulk has increased materially in the last couple of years. During the past winter it is estimated that bulk shipments totalled twice the size of such shipments in any previous season. Some persons expected 15 to 20 per cent of the entire Florida crop to move in bulk, but more conservative estimates place the bulk shipments at eight to 10 per cent. Even at the lower figures, Florida may ship a total of 2000 cars of oranges in bulk this year, which is an increase of over 40 per cent above last year's bulk shipments.

The stock is shipped grove run, culls out, no effort being made to separate it into classes. Although some carloads have shown decay, the oranges are reported to have carried well, and the fact that the practice is growing rapidly would indicate that it is proving satisfactory to shippers, in spite of certain disadvantages. Dealers in package material have come to recognize this as a factor to be considered in making their calculations for shock requirements for next season. Most shipments of bulk stock go to cities of 110,000 population or less, where dealers make a specialty of selling from the car door or from their stores direct to the consumer. Southern and southeastern markets receive more than 85 per cent of the bulk oranges, although shippers are gradually working into the northeastern markets.

THE FAMOUS Center Market at Washington, D. C., which was established on December 15, 1901, is now being operated by the Federal Bureau of Agricultural Economics. The income from this market last year was about \$250,000, and the expenditures were about \$165,000. Thus a comfortable balance was left in the treasury from the account. The market requires an expenditure of about \$25,000 per year for repairs and improvements. During the past year sanitary glass bakery stands were installed. During 1925 modern refrigeration machinery is to be installed.

During their time many famous men supplied their families by personal visits to this market. Among them were Thomas Jefferson, Daniel Webster, General Winfield Scott, and Chief Justice John Marshall.

A SHORT time ago when apples were selling in New York City at \$5 a box, the United States Department of Agriculture traced a box of Washington apples across the country to the

metropolis. Out of the consumer's \$5 it was found that growers received only \$1.18, but this was not clear profit. Out of this the grower had to pay 40 cents for the package and packing, leaving him a net of 78 cents to pay for the cost of production.

Of the consumer's \$5, the railroads received 80 cents, the retailers \$1.87, wholesalers 39 cents, jobbers 49 cents, and the association handling charges amounted to 27 cents per box.

The Department of Agriculture did not express an opinion as to whether or not certain middlemen were reaping exorbitant profits, but it did express the belief that the spread between producers and consumers can be lowered by more efficient handling and marketing of perishables.

THE CALIFORNIA Prune and Apricot Growers' Association recently made an analysis of the distribution of the consumer's dollar, which is of particular interest. The results are shown in the following table:

| | Cents. | | Cents. |
|-----------------|--------|----------------|--------|
| Grower | 40.0 | Association .. | 3.0 |
| Retailer | 25.0 | Advertising .. | 2.4 |
| Wholesaler .. | 11.3 | Brokerage | 2.2 |
| Packing | 8.3 | Discount | 1.0 |
| Transportation. | 6.8 | | |
| Total | | 100.0 | |

A series of articles recently appeared in the *Sunsweet Standard* which described the parts played by the broker, the retailer, the railroads, the jobbers, and the growers. A final article was presented by Manager A. M. Mortensen, since resigned, in which he described the part played by the association. He stated that the chief objects of the association were (1) to stabilize markets, (2) to reduce speculation, (3) to standardize the grade and pack and to establish a trade brand, and (4) to develop and extend the markets and to increase consumption.

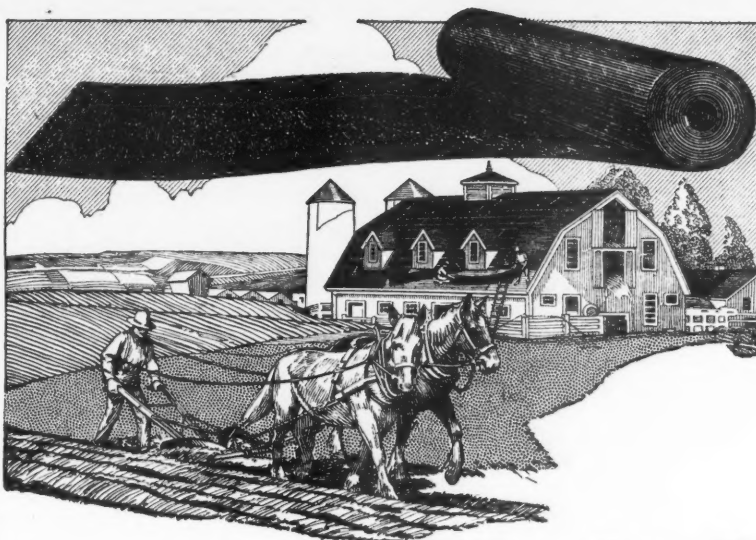
SOME people think advertising does not pay, but those who feel this way surely have not allowed themselves to think the question out to its logical conclusion. The tremendous advertising campaigns would not be conducted unless they paid. Successful business institutions are conducted on a cold business basis. Their results show that advertising pays, or they would not continue to advertise.

Some good figures showing how the consumption of various products has been increased through advertising were presented in the annual report of the National League of Commission Merchants. Since fruit growers are much interested in increasing the consumption of fruit, these figures are of particular interest.

| Products. | No. of Campaign Years. | Percentage of Increase in Sales. |
|-------------------------|------------------------|----------------------------------|
| Paint and Varnish..... | 64 | 275 |
| Sauerkraut | 207 | 207 |
| Raisins | 34 | 65 |
| Coffee | 65 | 143 |
| Plate Glass | 143 | 147 |
| Bread | 31 | 800 |
| Face Brick | 1,060 | 77 |
| Grapefruit | 47 | |
| Bermuda Travel..... | | |
| Walnut Lumber..... | | |
| Pineapples (canned).... | | |
| Cranberries | | |
| Greeting Cards..... | | |

PLANS are on foot for the direct shipment of Florida grapefruit to central European markets. The Bureau of Agricultural Economics recently issued the statement that the first shipment would go forward from the Southern Citrus Growers' Association at Lakeland, Fla., to Hamburg, Germany. The shipment was to be made under the direction of the Florida Citrus Exchange, which is interested in developing European markets for Florida citrus fruits.

THE UNITED States Department of Agriculture, in co-operation with the New Jersey Department of Agriculture, has recently issued a most interesting and valuable report on conditions in the New York market in 1924 with reference to New Jersey fruits and vegetables. The report shows the season during which the various crops were marketed; it indicates the prices prevailing on the markets; and it de-



Don't store hard-won crops under leaky roofs. Put down roofs that endure—roofs of Barrett Everlastic Smooth-Surfaced Roll Roofing.

Here's an Extra Rugged Roofing!

(It's 100% right for farm buildings)

How carefully you guard your bonds, deeds and other securities! But your hard-won crops and expensive implements! Are they as well protected?

This is a good month to make every building lastingly tight against drenching, driving rains—against winter's snows and thaws. And this time put down roofs that endure—roofs of Barrett Everlastic Smooth-Surfaced Roll Roofing.

Once down, this rugged roofing is off your mind—gives long years of repair-free, weather-tight protection. Its base is a thick, tough felt—Barrett-made to insure uniformly high quality. (Barrett Felts have been recognized as the standard by architects, building contractors and roofers for over half a century.) Its water-

proofing is asphalt, specially processed under the strictest control by Barrett laboratories.

This rugged roofing never rots or rusts. It's easy and economical to lay (skilled labor is not required). Moreover, it's fire-safe: flying sparks and embers fizzle out harmlessly on its surface (a big point to men living far from a good fire department).

See the full line of Barrett Roofings. A wide variety of colorful, slate-surfaced shingles—roll roofings both smooth-surfaced and slate-surfaced. Leading lumber, building supply and hardware merchants have these quality roofings in stock. Your dealer will show you a Barrett Roofing that exactly meets your needs—at an extremely reasonable price.

Slate-Surfaced Shingles
(Green Red Blue-Black)
Everlastic Giant Shingles
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Everlastic Multi-Shingles
Everlastic Octagonal Shingles

Roll Roofings
Everlastic Smooth-Surfaced
Everlastic Mineral-Surfaced
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| <input type="checkbox"/> CHICKEN HOUSES | <input type="checkbox"/> SHEDS |

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scribes the conditions with reference to supply and demand.

The commercial apple crop of New Jersey in 1924 was somewhat under the average production but slightly larger than that of 1923. The production of early varieties was heavier than during 1923. The mid-season crop was about the same, and the yields of late varieties were generally lighter. The quality of the apples was not as good in 1924 as in 1923. Most of the apples were under-sized last year.

FLORIDA'S citrus crop for the season has been estimated to be several million boxes below that of last season. However, orange and grapefruit shipments to and including March 5 were about 650,000 boxes above the shipments last year to the same date.

Records show that the citrus shipments to March 5 totaled 21,788 carloads oranges and 13,653 carloads grapefruit, making a total of 35,441 carloads. Shipments from the state to March 5 of last year were about

653,040 boxes less than the shipments to March 5 this season.

The increase in this year's business has been divided between oranges and grapefruit, though the latter has shown the greater increase. Orange shipments to March 5 this year were 777 carloads in excess of last year's shipments, while grapefruit shipments to the same date were 1037 carloads in excess of the shipments to the same date last year.

It is now believed that the citrus crop in Florida this season will not run much above 18,000,000 boxes. It was estimated on March 5 that there were about 5,000,000 to 6,000,000 boxes of citrus fruit left in the state.

FINAL data covering the production of oranges, mandarins, and lemons in Italy in 1923 has just been published by the Ministry of National Economy, reports Consul Harold D. Finley, at Naples. The area in Italy devoted to the cultivation of citrus fruits is shown as 108,300 hectares (one hectare equals 2.47 acres). Of this total only 47,700

hectares are devoted solely to citrus production, while the remainder includes areas in mixed cultivation. Production in 1923 totaled 6,181,000 quintals as contrasted with 6,774,000 quintals in 1922 and a yearly average of 6,942,000 quintals in the period 1914 to 1923 (one quintal equals 220.46 pounds). Production in 1923 in the principal provinces was as follows:

| | Lemons. Boxes. | Oranges. Boxes. | Mandarins. Boxes. |
|--------------|-------------------|--------------------|----------------------|
| Sicily | 7,482,516 | 4,222,870 | 246,705 |
| Calabria .. | 430,421 | 1,606,210 | 60,364 |
| Campania .. | 270,326 | 1,052,430 | 133,851 |
| Puglia | 167,969 | 133,851 | 5,249 |
| Sardinia ... | 36,743 | 131,226 | 28,870 |
| Liguria | 36,743 | 31,494 | 10,498 |

Note.—Figures in table converted from quintals on the basis of 84 hundredweight to a box of lemons and 78 hundredweight to a box of oranges.

The quantity of oranges and mandarins exported in 1923 totaled 813,327 quintals and that of lemons 1,409,214 quintals. Exports for the first nine months of 1924 amounted to 1,026,742 quintals of oranges and mandarins, a figure in excess of the total for 1923, and to 1,285,926 quintals of lemons.

The Orchard Home Department

Your Children's Heritage

IN ORCHARD homes all over the United States thousands of children are growing up. The fathers and mothers in each of these homes cherish the fond belief that their girl or boy is going to be a great credit to the country. That's what is called parental prejudice.

But, seriously, there's better foundation for these dreams among fruit growers than among almost any other class of our citizens. Just think into what favorable conditions for the finest all-round development your children are born. Some who read this may shake their heads and say, "No, my rich neighbor's children are favorably situated, but not mine."

There's a chance that this may be so in particular instances. If parents are not the right kind of honest, upstanding people, the child is at a disadvantage. If he inherits bad health, he's off to a poor start in the race of life which, however, has often been run with great distinction even thus handicapped. If the wolf howls too loudly at the door, then too much energy is apt to go into the struggle for mere existence to leave enough over for the fullest development.

But these things are the exception rather than the rule among fruit growers. We all know that toil close to the soil does in some mysterious way seem to build up character. The "honest farmer" does not invariably shine with honesty, but at least he has won the name for it from all competitors.

And the healthiness of life on the average fruit farm, is beyond question. I think we may fairly assume that the large majority of orchard children have honest and healthy parents. Not only this; most of them have as much to eat as is good for them, and life need not be so strenuous as to lack time for play and social contact, even though necessity may impose some wholesome chores on each child.

What more could be demanded in the matter of heritage and environment fitted to produce the finest type of American? Healthy, industrious, honest parents; a life free from drudgery and equally removed from the deteriorating effects of excessive luxury; a childhood flourishing far from congested cities and yet, by all the triumphs of civilization and science, kept abreast of the time in a way our fathers, lacking books and newspapers, without quick transportation, telephones, and radios, never dreamed.

More and more adequate schools are being provided for country children. More and more the sons and daughters of fruit growers continue their education after high school years in the business college, the normal school, or the university. To my mind, they have a distinct advantage over the children of very wealthy parents, who are in great danger of being spoiled. They are better off than children of approximately the same means as themselves who are deprived of a free, natural, clean, and wholesome country life.

Every blessing brings its own responsibility. A big responsibility rests on you, orchard parents. The children of a nation are the hope of that nation. Your children are its highest hope. You should be proud of this and teach them to prize such a heritage. Begin with them young. Remember the saying, "Give me a child until he is seven years old and I am not afraid of anything he may be taught afterwards."

"Vandals of the Night"

THIS title, worthy of the thrilling detective story, brings shivering visions of fierce night-prowling beasts or maybe of burglars. Yet these "Vandals of the Night" are far from terrifying to look at. Perhaps it would be better for mankind if they were more abhorrent in appearance.

Bright-eyed, timid, sleek, soft, and nimble, they look rather engaging, save to those who are irresistibly driven to leap upon chairs and screech at sight of their seemingly harmless little four-footed forms. Do you think the epithet hurled at rats by the delegates to the recent biological survey of the United States Department of Agriculture is rather harsh? Not a bit of it. Listen to what they tell us of these vandals.

"While America sleeps," say they, "rats destroy the entire labor of 200,000 men, and pestilence lurks in their wake." These are terrible accusations and gain more definite form when we are told that rats, beside destroying this immense amount of property in our country every year, "have caused more untimely deaths among mankind than all the wars of history."

To bring this a little closer home to you, let us recall that not long ago in one of our west coast cities, it was found that one in every 10 rats carried germs of the deadly Bubonic plague.

It costs much less to kill rats than to feed them. Their annual board bill averages \$2 per head, while one cent pays all funeral expenses for 100 rats. How many are you boarding at \$2 apiece?

The Department of Agriculture urges all of us to build rat-proof houses. In cases of old houses already infested, some safe, effective poison should be used. It looks as if we really could not afford to do otherwise if we value either health or wealth.

Fire Insurance on the Farm

FIRE insurance is no more an unnecessary expense than going to the dentist is an extravagance. Indeed, rather less so. If you neglect your teeth and wait until you can't stand it any longer, the dentist may repair the damage at a greater cost than would have been necessary earlier, and the bad tooth may have impaired your health, but at least something can be done about it.

In the case of fire on the farm, unless you are well insured, nothing can be done about it. The passing train, the flash of lightning, the careless cigarette, the raging forest fire that draws too near, any one of these may cause all your worldly possessions to go up in smoke.

True, fire insurance comes higher for country than for city buildings. But this in itself is an argument in its favor, proving, as it does, that the country property is considered a poor risk. In places distant from fire engines, and even far from many helpful hands, there is little or no hope of checking a fire once it is started.

Think over the history of your own neighborhood. Has not one or more whom you know of suffered loss from fire? Perhaps the last touch of bitterness was added by the fact that the premium had not been paid. The owner meant to do it the next time he went to town. Unpaid insurance is no better than none. You cannot afford to neglect this precaution which, perhaps, is all that stands between you and absolute ruin.

The Happiest Heart

Who drives the horses of the sun
Shall lord it but a day;
Better the lowly deed were done,
And kept the humble way.

The rust will find the sword of fame,
The dust will hide the crown;
Ay, none shall nail so high his name
Time will not tear it down.

The happiest heart that ever beat
Was in some quiet breast
That found the common daylight sweet,
And left to Heaven the rest.

—JOHN VANCE CHENEY.

"Thish match won't light."
"Washa madda with it?"
"I dunno—it lit all right a minute ago."—Dartmouth Jack o' Lantern.

Old Styles in Love Making

IN THE golden days of good Queen Bess," there lived in a little English village beside the Avon a merry lad destined to become the greatest poet of all ages. At least, that's what English-speaking people think of him, and as you speak English you have doubtless always accepted Shakespeare at this valuation. It is said that every considerable nation of the world claims to have produced the greatest poet, but that in every land which does not rank Shakespeare first, he is admittedly entitled to second place, which seems to settle the controversy clearly in his favor.

One of the most interesting things about geniuses is to see how much like the rest of us they really are. That Shakespeare poached deer on the neighboring splendid estate of Sir Thomas Lucy seems to bring him into closer sympathy with your own boys who are unable to resist watermelons they have not grown but which they feel an inalienable right to devour. That he wooed and wed a pretty girl from a nearby village, brings him into line with the later activities of your husband and sons.

The Home of Anne

Perhaps it is the alchemy of love, so potent to transform all things it touches, that makes one feel the presence of Shakespeare closer in his sweetheart's home even than in his own, which, to tell the truth, appears somewhat dreary and dismantled. But a short way from Stratford on Avon, in Shottery, the atmosphere grew warmer as I came upon the prettiest thatched cottage in the world, standing in a garden ablaze with bloom.

Immediately, sweet Anne Hathaway, who lived there with her parents and sister Elizabeth, was as real to me as if I saw her leaning out of the casement window under the low thatch. Others apparently feel the same, for there is no tourist shrine in all England more famous than Anne Hathaway's cottage.

The picturesque, low, rambling dwelling of many rooms and roofs on various levels, assures us that the Hathaways were no poor cottagers but well-to-do yeomen who lived in this old home for centuries. Look at the fine design of the old timbered walls. See that richly carved ancient four-posted bed in which Anne's parents slept, alas, on a water-thin mattress of plaited rushes. And here, on the dresser, stand many handsome pewter platters which succeeded the earlier plates of wood and were in turn followed by a rich array of old blue china of the kind so highly prized today.

Courting in Old Times

You, romantic reader, whether old or young, married or single, would feel a little thrill of joy as you raised your eyes to the diamond-lead panes of the dormer windows nestling under their heavy eyebrows of smooth-laid thatch. From one of these delightful Anne waved to her Will as he came whistling up the flagged garden path to the low entrance door.

Probably she cared not at all whether he really had been deer poaching. Running down the narrow stairway, Anne sat beside her lover on the oaken settle, still standing close to the huge fireplace in the kitchen living room. And very uncomfortable it must have been, straight, hard and narrow, set in full view of everyone, from the old man seated on his particular chair well within the great chimney itself, to the youngest toddler in the rushes on the floor.

In that age, decorum demanded this publicity, as it also prescribed that a daughter's room could be entered or left only through that of the parents'. We find just such a room where Anne and her sister Elizabeth slept. "Safe enough truly!" sniffs the modern Miss, by this time somewhat disillusioned

as to the joys of living and loving when the bard of Avon stepped blithely "across the fields to Anne."

But wait a bit. Even then there was a suggestive saying, "Watch the window." It was not very far from the ground, and history relates some active leaps on the part of maidens whose parents proved too stern.

And there were alleviations to the glaring publicity even if the courting settle stood in full view. The glimmer of a rush dipped in tallow made no such brilliant illumination as would reveal a discreet holding of hands. Even when the rush was bent double and each end lighted, the effect was not dazzling. And this was a rare extravagance, known as "burning the candle at both ends."

How Beer Was Drunk

A cheery sight to William must have been the tall leathern beer Jack that stood on the dresser. One grasped the handle, hefted the great leather jug, turned it over with a deft movement until it rested in the crook of his arm, and drank as long as he could hold up the Jack to his mouth. No wonder a well-wisher's toast was, "More power to your elbow."

And there is the very platter from which Shakespeare may have eaten when he joined the Hathaways at meals. A fine, dark, polished square of wood scooped out on one side for soup, meat and vegetables, then, when pudding time came, simply scraped and turned for use on the other side. They even practiced turning the tables, for the festal board, which was handsomely polished for appearance, was reversed to the plain wood for service at meals.

And how good the home-made loaf must have smelled in its oven, recessed in the thick wall of the chimney and with a door of solid wood much blackened on the inside. In the chimney, too, are recesses for tinder. As this was the only means of making a light, they had by all means to see that they "kept their tinder dry."

Chimney Ornaments

Here hangs the long-handled brass warming-pan to be filled with coals on chilly nights and thrust between the heavy hand-woven linen sheets so beautifully ornamented with drawn-work by sister Elizabeth. And, as if the great "Jack" could not hold enough beer for thirsty throats, there crowds onto that capacious chimney-breast a big leather bottle, something the shape of a pumpkin. It shows a large hole cut in its much worn side—a custom commemorated in a quaint verse that shows how modern glass bottles are:

"And when at last the bottle grows old,
And will no longer good liquor hold,
Out of the side you may make a clout
To mend your shoes when they're worn out."

Then take and hang it up on a pin
'Twill serve to put hinges and odd things in.
So we hope his soul in heaven may dwell
Who first found out the leather bottell."

What though the floor was but of flat stones thickly strewn with rushes that brimmed to the threshold, built high to keep them in, we may be sure there was fun and laughter when young Will Shakespeare sat with his sweetheart in this homey room. Not much more of pomp attends the last resting place of the lovers, where Shakespeare and his wife lie side by side beneath the slabs of the chancel in the little village church.

The great sculptor had just finished his model of an angel, and one of the numerous friends had called in to see it and at the same time give a little friendly criticism.

"Friend," said he sagely, "angels don't wear silk stockings. Did you ever see an angel in high-heeled shoes and silk stockings?"

For a moment there was silence in the studio. And then:

"Did you," asked the sculptor, "ever see one without them?"—London Answers.



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The Behavior of American Grapes Grafted on Vigorous Stocks

By F. E. Gladwin

THE FOLLOWING is a summary of Bulletin 508 of the New York Agricultural Experiment Station:

Some American varieties of grapes, even under the best of care, yield such small crops that they cannot be grown at a profit commercially, while others bear only in alternate years or at wider intervals. Some varieties yield bountifully in one season at the sacrifice of the vitality of the vine. Many varieties, while producing a large crop, yield fruit that is poor in cluster characters. The possibility that one or all of these defects might be corrected, at least in part, prompted a continuation at Fredonia of earlier tests made in the Wilcox vineyards at Portland, N. Y., with different rootstocks for American grapes.

Different species of grapes exhibit wide preferences for soil and moisture. Some thrive in the driest soils, while others do their best only with plenty of moisture. They also vary greatly in vigor.

In these experiments we have used Clinton, a Riparia-Labrusca hybrid, Riparia Gloire, and Rupestris St. George as stocks on which to bench-graft the American varieties, Delaware, Campbell, Niagara, Concord, Iona, and Catawba.

The one-year stocks were bench-grafted in the spring of 1914, grown a year in the nursery, and then planted in the vineyard in 1915.

Many plants, both grafted and ungrafted, died during the first few years of the experiment. Some of the fatalities of the grafted plants were no doubt due to poor unions which were, in part, due to the condition of stock and scion wood at the time of grafting. Good callousing before planting in the nursery is a requisite for success in bench-grafting.

A like number of ungrafted vines of each variety was planted at the same time alongside the grafted plants. These have had the same care as the grafted plants. It requires a few years for grafted plants to reach their greatest possibilities.

Quantity and quality of fruit and wood growth and trunk girth have been the principal criteria used in judging the effects of grafting.

The calculations indicate that the greater yields of fruit and cane from the grafted plants are in most cases significant. Likewise the increases in trunk diameters are, in most instances, significant.

It is believed that, all things considered, Riparia Gloire is proving the best stock for Delaware in these tests; that Clinton and Gloire are of about equal value for Campbell; and that Clinton is the best stock for Niagara. Gloire for Concord seems to offer more promise than the other stocks as evidenced by results in the Wilcox vineyards in 1914, 1919, and 1920. The choice lies between Clinton and St. George for Iona, while Clinton is the best stock for Catawba.

The quality of fruit has been markedly superior on all the grafted vines of Delaware, Campbell, Niagara, and Concord. Catawba gave the highest quality fruit for the three stocks on Clinton. Niagara on Clinton and Campbell on Clinton and Gloire probably showed the best quality. The fruit of Iona has thus far been bettered the least through grafting.

Grafting did not materially affect the time of foliation, nor did it influence greatly the ripening period.

Many other graft stocks might have been used in these tests, but lack of suitable land prevented. The use of the various unknown stocks is largely a cut and try process.

The greater cost of grafted grape plants of the commoner varieties will no doubt curtail their use on a commercial scale for some years, but it is believed that the higher quality, weak-growing varieties can be profitably grafted and grown in a commercial way.

Grafted plants should certainly have a place in every home vineyard.

GRASSELLI SPRAY PRODUCTS
Arsenate of Lead, Lime Sulphur, Calcium Arsenate, Bordeaux Mixture
Backed by Over 86 Years Experience

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CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL



Choosing Your Easter Bonnet

YOU HAVE heard the annually revived jibe to the effect that the only reason women all rush to church on Easter Sunday is to show off their new hats. We won't attempt to either prove or disprove the assertion, but the fact remains that most of us of the feminine persuasion do manage to acquire a new bonnet for Easter.

Probably the original hat was made to keep off the cold and the sun and the wind. But, nowadays, there's a fourth and even more important purpose of hats. It must improve your looks, or it isn't the hat for you. Ask yourself this question when buying a hat, "Does it make me look better?" Lots of hats are bought because they're pretty hats, or because they're stylish, or because they're supposed to be a bargain, or because some saleswoman by continuous talking wears out your objections. There's more to buying a hat than that.

The Hat Must Fit

The hat must be appropriate to the community in which you live and to your pocketbook. It must be suitable to the occasion for which worn, and in harmony with the rest of the costume. But, most important of all, it ought to fit you. It ought to fit not only your face and your head, but your whole body as well. It's harder to be sure about the fit of a hat than about most other things. Shoes, for instance. If shoes don't fit they usually hurt; sometimes they blister. But hats, unfortunately, don't blister, no matter if they ruin the chances of your face.

But what you want, of course, are rules to go by. The first thing to do is to determine the general type of hat which will be best suited to your needs. Plan your wardrobe for the season, taking into consideration clothes on hand and those to be added. Then determine the type of hat—whether it is to be a simple tailored style, a close-fitting sport model, a dress hat, or something for general service and all around wear. The average woman cannot afford more than one hat during a season, and many wear one hat for winter, summer, fall, and spring for two or even more seasons. This point must be given careful consideration.

For the woman who buys one hat a season or less, the general-service-all-occasion-hat is the one suited to her purpose. The hat itself should be in a becoming shade of some neutral color. The color chosen should be the one which will best harmonize with all other garments in the wardrobe. Gray and tan are to be found in many shades and one or the other is almost sure to harmonize with any spring wardrobe, besides being becoming to the individual wearer. Tan is more generally becoming than is gray, as the latter looks well only on women with clear complexions and good color. Black and brown are the standard neutral colors for winter wear as they can be given long, hard service without showing wear.

Add Color in Trimmings

Now you will at once argue that these neutral colors, gray, tan, black, and brown, are not your most becoming colors. And ye editor will at once admit that you are right. Here's how we solve the problem. Choose a simple hat of becoming shape in a neutral shade, and add color in flowers, bands, pins, and veils used judiciously and in your most becoming colors. Do not use all types of trimmings on one hat—a few flowers interestingly placed and a veil will make an attractive

spring hat, while a bow, or pin and veil will add much to a winter hat. By having the neutral color for the hat itself, you and your friends will not tire of it easily, and it will harmonize with every other garment in your wardrobe. Don't buy a green or a red hat unless you can get a new one in two or three months.

There is another point to be mentioned in favor of neutral colored hats with the color added in the "trim." You can change the trim yourself by adding a new ornament or flower, band or wreath or veil at a very small cost—and then, presto, you have a new hat. You can even have several veils, which are enjoying great popularity now, and change them to suit the color notes in various costumes. Veils are draped over the brim of the hat, in most instances, rather than over the face.

Now, we come to the choosing of the style of hat. Do not choose a hat conspicuous in either size, shape, color or trimmings unless you can replace it often. A frilly, fussy hat with lots of trimming is entirely out of place for ordinary shopping and every day wear. On the other hand, an extremely tailored, untrimmed hat is very trying to wear. Only a very beautiful woman can be beautiful in this type of hat.

Crown Size Important

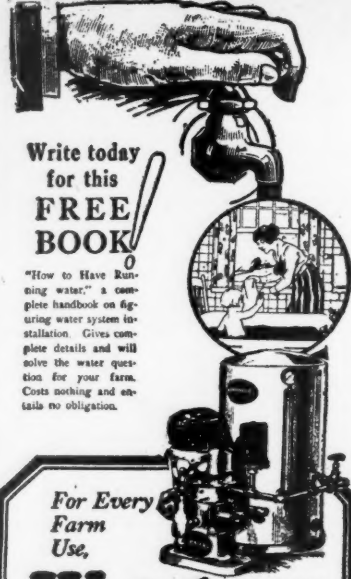
"Watch your crown," says one authority on becoming hats. "All crowns should be at least the width of the face. A close-fitting crown makes the face look bigger, and is best for the small-featured, while a crown that's a little wider than the face, and that frames the hair line, is better for the heavy, broad face. A shallow crown is trying for most people to wear, and is usually ugly in appearance."

Brimms are important, too, according to this same authority. A wide brim makes the face look smaller and apparently shortens the figure. Very short girls should not wear extremely big hats, if they want to make the most of their inches. This season, trimmings have not been heavy, a ribbon cocarde or knotted scarf or bow on top for the sports hat, a single big flower or flower cluster, a little applique or veil for the dress hat. But remember when heavy trimmings are in style, to look out for them. They dwarf the little face and the small body.

The position of the trimming is important. If you have ever seen a tall, thin, angular woman wearing a little round hat with a tall ostrich feather standing straight up in front (they have 'em like that in the movies, if nowhere else) you will not need this article to remind you that the wrong placing of trimming can make a hat and its wearer ridiculous. A short person might be able to wear a hat with a modified up-standing trim, such as a ribbon bow or metal or feather ornament. This season the popular place for trim is on the top of the crown. This style is far more becoming to the short than to the tall person. The top trim, providing it is not too small and narrow, is also becoming to the full face. Bands or any other striking trimming running in unbroken line around the crown are suitable to the long, thin face and to the perfect oval only.

Hat at Angle Best

A brim which sits straight across the face and has no break or variation in width is unsuited to the full face but is often becoming to the too-long face. Most hats are more becoming to



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the average woman if placed on the head at ever so slight an angle, and fashion favors us in this also, as that is the way they are being worn. Then, too, many an otherwise lovely hat is spoiled by being worn too far back on the head. A hat should frame the face and not sit off the face on the back of the head. It will be more becoming if it comes down over the forehead to close above the eyes. Just the correct placing will be determined by the individual face.

Many women inquire about the kind of hat to wear with bone-rimmed spectacles. A slightly drooping brim is the best choice if you wear glasses. The brim should not scoop too much, and it should extend an inch or so beyond the glasses. This casts a becoming shadow and keeps the lenses from reflecting the light. This same type of hat will be found best suited to the face marred by blemishes of any sort.

The color of the eyes, hair and complexion determines the choice of hat color as well as the other items in the wardrobe and the length of time the hat must be worn. Black is becoming to youthful faces with some color and no trace of sallowness. Older women with wrinkles and sallowness should remember that black is no friend of theirs. If they feel they must have a black hat for winter, the color should be relieved by a rose, blue or other becoming lining, or a veil with colored dots in it, or a colored trim of flowers or ribbon.

Black will often take all the life out

of gray hair, while gray livened up with a bit of color will bring out all the beauty of the silver hair. The right shade of brown may be lovely on either brunettes or blondes. A dark blue is becoming to blondes. Those rich russets and browns are best for the red-haired sister. Green is most attractive with red hair. These are basic principles. Almost any of these neutral colors can be made becoming with the proper trimmings.

Use Care in Choosing

In picking out a hat, don't fail to look at it from all angles. A hat may be quite charming from the front, but when you look at it from the side you find that it makes your nose turn up even more than He intended it to; while at the back the hair line is eclipsed, the neck shortened, and the whole effect is one of a small head jammed down onto broad shoulders. Equally important, though not so often considered, is the relation of the lines of the hat to the whole figure. A full-length mirror is really an invaluable advisor.

The best of the hats just now are on the whole becoming, so the chances are with you in your choice. But don't let this make you over-confident. Don't take the first hat the saleslady puts on your head. And if anybody tries to get you to buy a hat that goes on with a shoehorn, or that sits on your head like a large, enveloping storm cloud, don't let them do it! Buy only a conservative, appropriate, and becoming hat this Easter.

Attractive Jellied Desserts

WHEN the "What'll I have for dessert?" question troubles the cook, she will not go far amiss if she chooses one of the many types of jellied desserts. There are so many kinds that she could serve a new one each day for several years without once "repeating." They may be moulded plain or with fruit, or whipped till fluffy and served with fruit and other garnishes. Whipped cream is always a welcome addition, and it lends a festive air to even the plainest dessert. Jellied desserts are attractive in appearance, easy to make, satisfying in flavor, and inexpensive when "trimmings" are used in moderation. They can be made in the morning or the night before, in fact, must be prepared early. In this way they are all ready for garnishing and serving without further attention during the busy time of preparing dinner.

Strawberry Sponge

- | | |
|---------------------------|-----------------------|
| 1½ T. granulated gelatine | 1 c. sugar |
| ½ c. cold water | ½ pt. cream |
| ¾ c. boiling water | 3 egg whites |
| | 1 c. strawberry juice |
| | 1 T. lemon juice |

Soak gelatine in cold water, dissolve in boiling water, strain and add sugar, lemon juice and strawberry juice. Chill in a pan of ice water. When quite thick, beat with wire spoon until frothy, then fold in whites of eggs beaten stiff, and whipped cream. Line a mould with halves of strawberries, turn in mixture, smooth evenly, and chill. Unmould and serve.

Lemon Jelly

- | | |
|-----------------|---------------------|
| 2 T. gelatine | ½ c. lemon juice |
| ½ c. cold water | 2½ c. boiling water |
| | 1 c. sugar |

Soak gelatine 5 minutes in cold water, dissolve in boiling water, strain, and add to sugar and lemon juice. Turn into mould and chill. Serve with whipped cream.

Russian Jelly.

- | | |
|--------------------|-----------------------|
| 1 T. gelatine | ¾ c. sugar |
| ¾ c. cold water | ¾ c. orange juice |
| 1 c. boiling water | 1½ T. lemon juice |
| | ½ c. loganberry juice |

Make the same as lemon jelly, cool slightly, and beat until frothy and firm enough to mould. Turn into a mould and chill. Serve with whipped cream.

Apricot Bavarian

- | | |
|--------------------|--------------------|
| 1½ c. apricot pulp | 2 eggs |
| 1 T. gelatine | ½ c. sugar |
| ¾ c. cold water | 1 c. whipped cream |

Soak gelatine in cold water. Heat pulp of stewed, dried apricots in double boiler. Separate whites and yolks of eggs. Beat yolks, add sugar and stir into hot apricot pulp. Cook until it begins to thicken, cool slightly and add gelatine. Fold in stiffly beaten egg whites and whipped cream. Pour into wet mould and set in pan of ice water until firm. Unmould, serve with custard sauce or whipped cream, and garnish with cooked apricots or candied cherries. Will serve six persons.

Junket Ice Cream with Peaches

- | | |
|--------------------|---------------------|
| 4 c. lukewarm milk | 1 T. cold water |
| 1 c. heavy cream | 1 T. vanilla |
| ¼ c. sugar | 1 t. almond extract |
| ¼ t. salt | Green veg. coloring |
| 1½ Junket tablets | 1 can peaches |

Mix first four ingredients, add Junket tablets dissolved in cold water. Turn into a pudding dish and let stand until set. Add flavoring and coloring. Freeze, mould and serve, garnished with halves of peaches, filling cavities with halves of blanched almonds, if you so desire. To prepare peaches turn into a saucepan,

add ½ cup sugar, and cook slowly until syrup is thick. Cool before garnishing ice cream.

Banana Sponge

- | | |
|---------------------|----------------------------------|
| ½ envelope gelatine | ½ c. sugar |
| 1 c. cold water | 2 egg whites |
| ¼ c. banana pulp | 1 dozen chopped blanched almonds |
| 2 T. lemon juice | |

Soak gelatine in cold water 5 minutes. Put banana pulp, lemon juice and sugar in saucepan and bring to boiling point, stirring constantly. Add soaked gelatine, and stir until cool. When mixture begins to thicken fold in whites of eggs beaten stiff, turn into wet mould or paper cases and sprinkle with chopped nuts.

Jellied Prunes

- | | |
|-------------------|-----------------------------|
| 1 c. prune juice | 2 c. cooked prunes |
| 1 c. orange juice | from which pits are removed |
| ½ c. sugar | |
| 2 T. gelatine | |

Soak gelatine in ½ c. cold water. Heat prune juice to boiling point, add gelatine and sugar, remove from fire and stir until dissolved. Add orange juice; set aside to cool. When beginning to thicken add prunes and turn into a wet mould and set in cool place or pan of ice water until firm. Unmould, serve with whipped cream. Serves six persons.

Orange Charlotte

- | | |
|--------------------|----------------------------|
| 1½ T. gelatine | 3 T. lemon juice |
| ¾ c. cold water | 1 c. orange juice and pulp |
| ¾ c. boiling water | Whites 3 eggs |
| 1 c. sugar | ½ pt. cream |

Soak gelatine in cold water, dissolve in boiling water, strain, and add sugar, lemon juice, orange juice and pulp. Chill in pan of ice water. When quite thick, beat with wire spoon until frothy, then add whites of eggs beaten stiff, and fold in whipped cream. Line a mould with sections of oranges, turn in mixture, smooth evenly and chill. Unmould and garnish with whipped cream and red candied cherries.

Nut Frappe

Dissolve a package of strawberry Jell-O in a pint of boiling water. Set aside to harden. Stir ¾ c. granulated sugar into a pint of whipped cream. When Jell-O is on the point of setting, mix Jell-O and whipped cream by beating with a fork, and add a cup of chopped nuts. Serve in sherbet glasses with fresh or preserved fruit.

Abbreviations.

- | |
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| 1 t. equals 1 teaspoonful. |
| 1 T. equals 1 tablespoonful. |
| 1 c. equals 1 cupful. |
| 1 pt. equals 1 pint (2 standard cups). |
| 1 qt. equals 1 quart. |
| All measures are level. |

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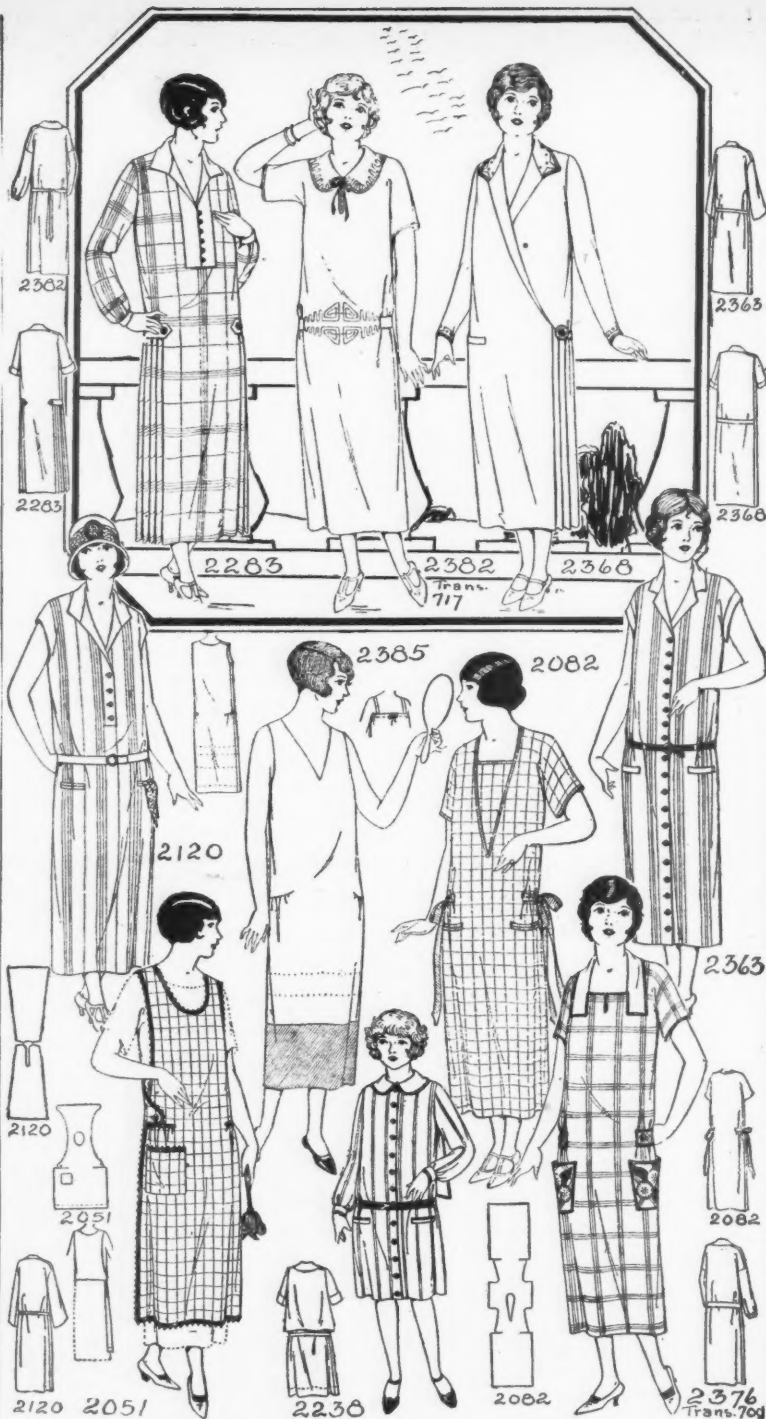
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quires ¾ yard 36-inch material with
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¾ yard 40-inch material.

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42 inches bust measure. Size 36 re-
quires ¾ yard 36-inch material with
¾-yard 36-inch contrasting.

No. 2385—Slip to Wear With Your
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shoulders and a deep V-shaped neck-
line at front or with a straight upper
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part of the slip can be made of a lin-
ing silk, crepe de Chine, sateen or
cotton, with the lower section made of
material to match or harmonize with
your tunic. Cut in sizes 16 years, 36,
38, 40, 42, 44 and 46 inches bust mea-
sure. Size 36 requires 2¼ yards 32 or

36-inch material with ¾-yard 32-inch
contrasting.

No. 2082—Becoming One-Piece Dress.
The diagram below the sketch will
convince you how easy this dress is
to make. It cuts entirely in one piece.
Cut in sizes 16 years, 36, 38, 40, 42
and 44 inches bust measure. Size 36
requires 3 yards 40-inch material.

No. 2363—Youthful Style.

Cut in sizes 16 years, 36, 38, 40, 42
and 44 inches bust measure. Size 36
requires 3 yards 40-inch material with
¾-yard 27-inch contrasting.

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The accompanying diagram is a re-
duced likeness of the pattern which
cuts all in one piece. Cut in sizes
small, medium and large. The me-
dium size requires 2 yards 36-inch
material.

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Cut in sizes 6, 8, 10, 12 and 14 years.
Size 8 requires 1½ yards 42-inch ma-
terial with ½-yard 36-inch contrasting.

No. 2376—Becoming One-Piece, Slip-On
Dress.

Cut in sizes 36, 38, 40, 42 and 44
inches bust measure. Size 36 requires
2¾ yards 36-inch material with ¾-yard
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A Big Huckleberry Field

By W. A. French

THE PENINSULA between North Bay and Henderson Bay, in the southern part of the Puget Sound country, about three miles in width and 15 miles long, is practically one huge huckleberry field, the proportion of cleared and cultivated land being comparatively small. Mostly logged-off land, it is the natural home of the wild huckleberry. Nowhere else in the West have I seen such an extensive field of producing bushes. One commission firm in Seattle states that last year it bought from pickers in this area no less than 440 tons, for which it paid over \$40,000. On January 1, it still had 200 tons in cold storage.

Considering that there is no work of cultivation or pruning or training required, the wild huckleberry industry has its attractions.

Oregon Walnut Growers Organize

By W. A. Scott

THE OREGON Walnut Exchange has been organized with five local associations, having a membership of about 200 walnut growers. The headquarters of the exchange are at Dundee, where the local association has 100 members and a new drying, hulling and storage plant that cost \$10,000. The other four local units are at Salem, Amity, Scholls and Lebanon. The central exchange has a plant at Dundee for grading, sorting, sacking and warehousing, and has taken over the sales service established by the Dundee local association. The exchange is controlled by a board of five directors, but its activities are under the management of W. H. Bentley, who states that the walnut production for 1924 was a little less than that of the previous year.

Dwarf Apple Trees

DWARF apples have no place in commercial orchards in New York when compared with the standard sorts, according to horticulturists at the Agricultural Experiment Station at Geneva. Although the advantages claimed for dwarf trees will appeal to amateur growers, the weaknesses of these miniature trees render them unfit for large plantings.

Due to the fact that the dwarf trees take less space, a greater variety of fruit can be grown in the garden or small orchard than where standard-size trees are grown. Dwarf apples also make attractive ornaments, if properly cared for, and thus add to their usefulness for home planting. For commercial orchards, however, dwarf trees lack hardiness, are subject to winter-killing, are easily uprooted by wind, tend to produce suckers in abundance, and are no more productive than the standard kinds which do not possess these undesirable traits, it is said.

"Dwarf trees are trees which by various means have been made to grow smaller than normal trees of the same variety," say the station horticulturists. "The dwarf trees are just as healthy and vigorous as normal trees and produce fruit of the same size and quality."

"In America, dwarfing is usually accomplished by grafting scions or cuttings from standard varieties on some rootstock which dwarfs the top. It is usually necessary to resort to summer pruning as well to secure true dwarfs. On the station grounds, the standard trees are grown on the so-called French Crab stock, which is widely used in America. Dwarf apples come into bearing slightly earlier than do standard apples, but the difference in this respect is not sufficient to make the dwarf trees any more desirable commercially."

Peaches in northern Ohio have been uninjured by the winter weather, according to Vernon H. Davis of Catawba Island.

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Cropping Between the Tree Rows

(Continued from page 8)

in general are considered good intercrops. With proper soil and moisture conditions they are capable of giving good returns.

Among the perennial cultivated crops might be mentioned asparagus and rhubarb. These are grown in



A young apple orchard interplanted with squash

"early" sections to good advantage, although they require considerable care and an especially rich soil if they are to prove profitable.

Small Fruits as Intercrops

Where small fruits are grown, the strawberry generally heads the list. While requiring an immense amount of work, they are one of the best paying crops and have helped many fruit growers in solving the bread and butter problem until they had fruit to market.

Blackberries, loganberries and raspberries, which are sometimes advised against on account of their susceptibility to crown gall and the fact that they require considerable moisture, are very important crops in sections for which they are particularly adapted.

For the orchardist handling live stock as a side line, or where the market and soil conditions are not suitable for the growing of truck crops, such things may be grown as carrots,

productiveness of the soil, well and good; otherwise devote all the land to the trees or remove the trees so as to have all the land for the crop.

The Double Spray Gun

By H. P. Curtis

THE GREATEST improvement in spraying equipment since the invention of the spray gun has made its appearance on the market in the form of a double nozzle gun.

The double gun enables one man to do the work of two, and, at the same time delivers the liquid to the tree in a well broken mist. It has a range that is equal, if not superior, to many of the single guns now used. Another advantage is the positive shut-off at the fork leading out to the nozzles instead of against the nozzle disk itself. This feature allows one to shut off the gun with full pressure on it and unscrew and clean the nozzles if necessary without the unpleasant experience of being covered with dope from the hose pressure. An excellent mix is assured because of the two feed pipes which carry the liquid from the fork to each nozzle. One pipe empties directly under the hole in the disk while the other one empties around the outer edge of the mixing chamber through several openings placed at an angle.

This gun is short, compact and durable. The price is not much above that of an average single gun.

Of course, this gun is only practical for use on large outfits that have a capacity up to 10 gallons per minute or more. When used on such an outfit with at least 300 pounds pressure, spraying becomes a pleasure—if such a thing is possible.

The wind does not bother nearly so much as with a single gun or rod. One man with a double gun, a good three-cylinder outfit, and handy water can blow on over 3000 gallons per day. This gun allows the large grower to cut in half the number of men who do the spraying and enables the small



Strawberries between apples in Washington

beets, mangels, field peas, corn, potatoes, and after the first few years clover or alfalfa. Carrots furnish an excellent stock food and are very profitable when grown for this purpose.

Allow Plenty of Room for Trees

In growing any crop, plenty of room should be allowed on each side of the tree row in order to avoid competition between the trees and the crop. Four feet is the general distance, while in the case of corn six feet should be allowed.

The greatest mistakes that are likely to be made in growing a crop between the trees are that the grower will forget or neglect to keep up the fertility of the soil, and that he is tempted to continue the practice of cropping too long. Intercrops, aside from the legumes, such as clover or alfalfa, should generally not be grown after the trees reach bearing age. The primary consideration should always be the good of the orchard. If a crop can be produced without impairing the

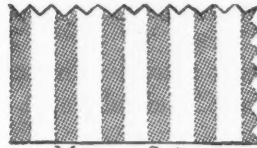
grower to cover his entire acreage to suit himself.

The spraying process has resolved itself into time of application and thoroughness rather than the fine points of materials used. The trunk, limbs, branches, leaves and fruit must be completely covered, both inside and out, before a tree can be called sprayed.

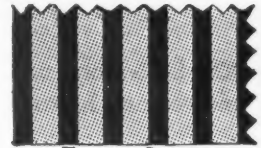
The production of clean fruit is becoming a more difficult and expensive proposition each successive year, so any invention that will cut down costs and at the same time do an effective job is to be welcomed.

ACCORDING to J. R. Bent of the Illinois Agricultural Association about 150 pounds of calcium carbonate and 18 pounds of magnesium carbonate are lost from each acre every year in Illinois by means of drainage waters. Rotation and the use of deep rooting legumes will do much to curb this waste, according to Mr. Bent.

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"The Inside Story of the Apple" is a reprint of a series of articles which originally appeared in the AMERICAN FRUIT GROWER MAGAZINE.

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The Chapter Headings

The Leaves and Their Uses
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GOOD SOIL alone won't grow a crop. It must be plowed and harrowed, seeded and cultivated.

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Today, representing ninety per cent of the nation's electric service, three hundred committees are engaged in studying the needs of their communities and the problems of the industry as a whole. In its cooperative program with the Farm Bureau Federation, National Grange, American Society of Agricultural Engineers, Power Farming Association, and the U. S. Departments of Agriculture, Commerce and the Interior, the National Electric Light Association is able to speak for a united industry engaged in working out a practical way of serving that larger group of "farmers" on whom the prosperity of the nation must always depend.

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BETTER HOME DEPARTMENT

By E. W. Lehmann

The Drainage Problem

SPRING is the time of the year when lack of proper drainage is most noticeable. Our dirt roads become almost impassable on account of it; our barnyards become muddy; wet spots in the field cause late planting; and often the basement or cellar under the house becomes damp, or if drainage is very bad it may even become a pool of water.

Much can be done to relieve this situation. The condition of the road may be improved on a community basis by installing a tile drain. Very often one wet spot will make a road impassable for several weeks each year. The loss of time and the effort to get through such a place may justify any one farmer who has to travel the road to go down in his pocket and buy the tile to drain it. A community can install a drain with little expense to the individual, and there is always the possibility of a refund from the road officials.

The Driveway

Many times it is the driveway from the public road to the farmer's barnyard where the greatest trouble occurs. A little forethought in keeping the side ditches open, or in installing tile, with surface inlets if necessary, will relieve such a situation. An old Scotchman once said, "The requirements of a good road are to have a tight roof and a dry cellar." If we allow water to seep under the road bed, our trucks and heavy traffic will certainly cut through. The application of oil on earth roads, and the practice of dragging it, help to provide a tight roof; along with these, we must see that no water is allowed to stand at the sides of the road, which will surely cause trouble if it seeps under the road bed.

Muddy Barnyards

The muddy condition in our barnyards and around the house can be greatly improved by installing downspouts connected with a drain so that no water from the roof flows on the surface of the ground. Both surface and under-drainage should be looked to at this season of the year. If the water does not get to the tile readily, due to the puddled condition of the soil, it might be well to provide a surface inlet or simply excavate down to the tile and fill in with gravel or other coarse material, so the water will quickly seep into the drain.

Wet Cellars and Basements

The cause of most damp cellars and basements is seepage water from some source or another. Sometimes the seepage may be water from the roof that has not been carried off by proper drains, or it may be the seepage from some distance away that is flowing under the ground.

In either event, the remedy is to put in drain tiles to intercept the flow. The first requirement for such a drain is to have a good outlet. In very flat areas this is hard to obtain. Place the line of tile a little below the level of the basement floor and just outside the wall. If the tile is covered with porous material, like gravel or cinders, it will better catch the seepage water. Be careful to lay the tile on an even grade with plenty of slope, at least six inches fall per hundred feet.

Sometimes a house may be well located as far as drainage is concerned and the surface drainage may be good, yet water may persistently get into the basement. This may be due to water from the downspout discharging too near the house and simply seeping down and through the wall, or

it may be due to the water from the downspout flowing into a drain that has become partially stopped up. The remedy is evident.

Every few years we have a wet season that brings to our attention the need of more thorough drainage in the fields and orchards. No farmer can afford to farm or try to farm land that needs drainage; the lack of tile drainage no doubt costs more than the price of installing it. The problem of farm drainage and soil washing will be discussed in another issue.

Adding Life to a Car

A CAR that is not painted or polished soon becomes dirty in appearance and it rapidly depreciates in the eyes of the owner. Such a car is more liable to be abused than the one that is kept spick and span. Although we put on a little paint primarily to cover the scarred or rusty spots in order to make the old boat look a little better, the result is that we drive a little more carefully, give the lubrication better attention, and look after the car better generally, which means more years of service.

Rejuvenating Benefits All Cars

A car that is used for general service about the farm cannot always be kept as clean as the car that never leaves the pavement, but an occasional rejuvenating is worth while even for the old flivver. A car that has only been used one or two years may only need cleaning and polishing. Many fruit growers have two cars or a car and a truck. Under such conditions one can be laid up for a week or 10 days to give it the once over. A few years ago when automobiles were not so common, most cars were given excellent care, but now they are more liable to be neglected.

There are many prepared automobile varnishes and paints on the market that are inexpensive and can be applied by any person who can follow simple directions. Painting outfits may be secured containing everything needed in the way of top dressing, enamel for hood and fenders, paint for remainder of car, emery cloth for removing rust, etc.

Clean the Car Thoroughly Before You Begin

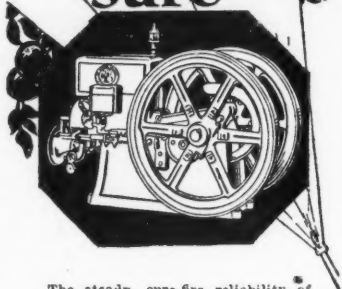
The chief point to keep in mind in painting the car is to have it thoroughly clean and dry before you begin. If the car has been neglected, remove all rust or flaked enamel with a wire brush and emery cloth. Go over the surface with a cloth moistened with gasoline to remove oil or dust particles. Do the job of painting in a warm room free from dust. If you can put the car in a shop that is heated, it will be an advantage, because auto paints flow on best without streaking when the temperature is around 70 degrees Fahrenheit or above. Don't get inflammable paints too near an open fire.

Polish for Auto Body

If painting is not necessary, an excellent polish can be made by thinning down boiled linseed oil with turpentine. This should be applied sparingly with a cloth to the surface after it has been thoroughly cleaned. It should then be rubbed briskly with a soft, dry cloth or with cotton waste. A polish that is recommended by one of the largest manufacturers of motor cars is made by mixing one gallon of turpentine, three and one-half ounces citronella oil, one pint paraffine oil, or light cylinder oil, and one and one-half

(Concluded on page 39)

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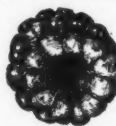
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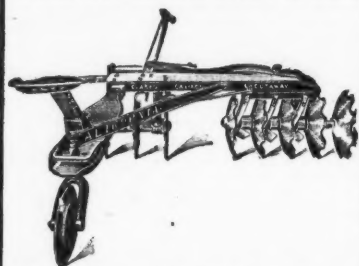
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Winter Injury of Fruit Trees

(Continued from page 3)

tion fairly. It can be settled only by direct experimentation with trees of the same varieties grown under similar conditions in northern and southern nurseries. At this station, however, where we grow trees from nurseries in every part of the country, there is nothing to indicate that there is any difference in the hardiness of trees grown in northern or southern nurseries.

Are Young or Old Trees Hardier?

Young trees suffer most in severe winter freezes. Probably this is because they make a much greater and much ranker growth than old trees, so that the cells are possibly larger and contain more sap during the winter. The formation of buds in old trees is helpful in maturing the wood. No doubt old trees can be forced to produce large quantities of new wood and thus suffer from winter injury; on the other hand, the luxuriant growth of young trees can be kept down somewhat by orchard treatment. Old trees which possess very low vitality also are less hardy than vigorous young trees. One often finds that old trees which have suffered from insects and fungi are killed by cold. But, if young trees are more susceptible to winter injury than old ones, it is just as certain that they are much more likely to recover, if recovery is possible. Furthermore, their return to normal condition is more rapid. This is because of the greater vigor of the young plants, and because much new covering of bark is possible for small trees and usually impossible for old ones.

Conclusion

Assuming that which every fruit grower knows, that certain varieties of every fruit are inherently hardier than other varieties, and that selections of hardy fruits should always be made for cold situations, what, then, can be done to prevent winter injury? It can be set down as a certainty that hardiness is in great measure dependent on the maturity of the plant. Every part of the tree should be vigorous and the wood matured, as those parts of the plant least vigorous with the poorest sap flow are least hardy. It is well proved, too, by abundant observation and experimentation, that soils may be either too wet or too dry, and that trees on such soils are susceptible to winter injury. Cover crops, snow, and a muffler of leaves are protection against winter killing of the roots. Fall plowing does not bring about conditions favorable for winter killing. Overbearing in a season preceding a cold winter weakens trees so that they are susceptible to cold, as do the attacks of insects and fungi. The notion that trees are hardier under neglect than under high culture is false. The more vigorous the tree, if the wood matures, the hardier.

Adding Life to a Car

(Continued from page 38)

ounces of oil of cedar. Apply in the same manner as suggested above.

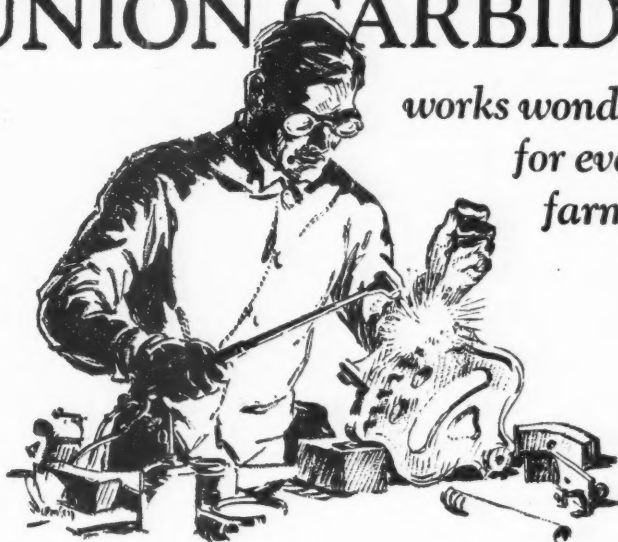
No polish should be used on the body of a car until the varnish has begun to get dull. If it has become very bad, its appearance can be greatly improved by rubbing vigorously with a mixture of cylinder oil and kerosene. Either of the polishes suggested will be found satisfactory for polishing furniture.

A MERICAN fruit growers are building up a strong export trade in apples, judging by shipments made in 1923-24.

Exports of apples from the United States from August 1, 1923, to April 1, 1924, totaled 1,917,224 barrels and 5,516,295 boxes as compared with 565,130 barrels and 3,253,281 boxes during the corresponding period of the previous season. This represents an increase of 221 per cent in barreled shipments and 70 per cent in boxed varieties. Most of the fruit went to the United Kingdom.

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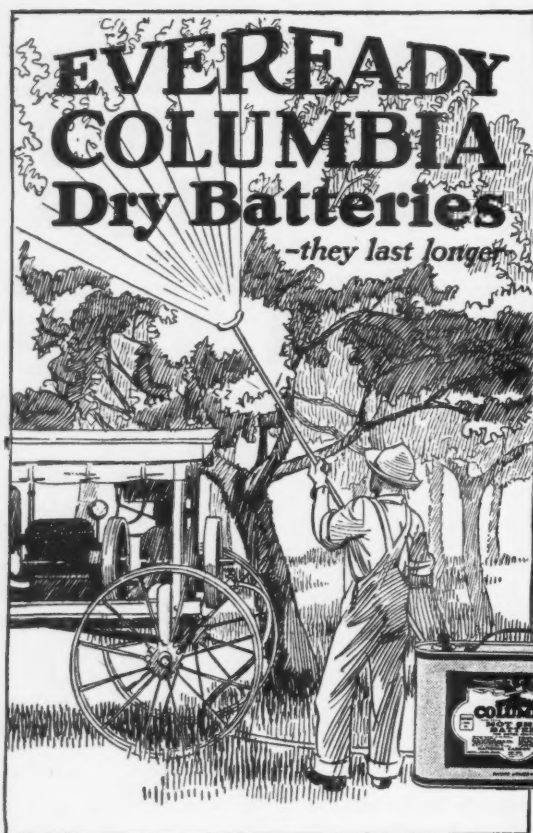
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Bee Keeping for Fruit Growers



By H. F. Wilson

Good Care of Bees in April
Profitable

AFTER getting the bees through the winter period, the month of April is a very important one for beekeepers in the northern states. Let us again consider some of the important manipulations described in last month's columns.

To get bees for the honey crop in June, we must have young bees to begin with in April.

Provide protection of some kind, if bees are not already in packing cases.

Provide plenty of stores for brood rearing, and an abundance of room.

Then you will have strong colonies for the beginning of the honey flow.

For swarm control in June, start manipulations in April. Swarm control, after all, is not a serious problem if care is taken in early manipulations. The first manipulation to prevent swarm control is re-queening each colony every July and August. Queens less than a year old do not have the inclination to swarm that we find in older queens.

Always keep more room in the brood chamber than the queen can fill. To do this, add an extra super to each colony of bees about the first week in May, or earlier, before the brood chamber becomes crowded. Do not wait until the last of May to increase the size of the brood chamber, because by that time the bees certainly will have developed the instinct of swarming and it will be much more difficult to keep them from following out their purpose than if abundant room had been provided earlier. Having young queens and providing a double brood chamber will normally reduce the swarming to five or 10 per cent without any further effort on the part of the beekeeper.

Provide each colony of bees with an inside water feeder during the month of April. Otherwise the bees will be forced to bring the water in from the field.

Extra Supers Necessary for
Big Crops

THE AVERAGE annual production per colony in the United States is comparatively small, being only about 13 pounds per colony. It is possible to greatly increase this average by having super room at the beginning of the honey flow. A practice followed by many beekeepers is to leave only one super on a hive at a time. As soon as this is filled it is removed and a second super is added. This practice is likely to cause the loss of from five to 10 pounds of honey per colony at each operation, due to the fact that when this space is filled up the bees are unable to bring in more honey and store it, and so they loaf at the entrance.

It is also well known that bees need a certain amount of ripening space. By ripening space we mean cells into which the bees can unload their honey and leave it while it is being ripened by the young bees. After being ripened, the bees remove it to the cells, which, as soon as filled, are sealed.

Prevent Foul Brood

FOUL brood diseases of bees cause enormous losses in America each year. These diseases can be prevented. As soon as you start looking over your bees in the spring, make careful examinations to see if the brood is healthy. If you find any signs of dead

or dying bees, send samples to your agricultural college for identification and ask for instructions on how to fight the disease. Do not move frames from one place to another if you have any disease in any hives in your yard.

Remember that there are two types of disease which attack bees in the larval stage. One of these is known as American Foul Brood, and it cannot be eliminated from the hive without destroying all combs and honey in the diseased hive. On the other hand, the disease spreads rapidly, not only within the hive, but from one hive to another, and a complete apiary may be destroyed in two years' time. Treatment is best applied during the honey flow.

European Foul Brood can be eliminated without destroying the combs and honey. Treat diseased colonies by re-queening and feed sugar syrup. This disease causes the greatest damage in April and May. If the disease starts, feed the diseased colonies heavily and an immediate improvement will be noticed.

Methods of treatment for American Foul Brood were given in the May, 1924, issue of this magazine.

Are Bees Valuable to the
Fruit Grower?

FRUIT growers should watch trees for pollinating insects. It would be well worth while for each fruit grower, whether he has bees or not, to carefully watch the trees during the blossoming period to note just how many insects appear on the blossoms. These insects can be grouped into two series: (1) common honey bees; (2) all other insects. Secure a little note-book and when you are in the orchard keep a record of the number of insects which you see visiting flowers on individual trees, or, in the case of large trees, on single branches. Also note the number of flowers visited by a single bee. If any of our readers are sufficiently interested to do this the coming spring, we will be very glad to have them advise this magazine and we will publish the results of such observations.

Note the following statements carefully: The value of the honey crop in the United States is annually many millions of dollars. No statistics are available to show just how much it is, but it is probably somewhere between \$25,000,000 and \$50,000,000. Experts have estimated that the good done by bees in pollinating plants is several times greater in economic value than the total honey crop. The bee, then, is of two-fold importance and is the only animal known that pays his own board and works without pay.

Idaho Horticulturists Hold
Annual Meeting

THE IDAHO State Horticultural Society held its thirtieth annual convention early in February. A large program of exceptional merit was presented. There was a large attendance of interested growers.

Freight rate reduction, co-operative marketing, better distribution, more economic reduction and greater efficiency all around were some of the subjects particularly stressed. The speakers included prominent Idaho authorities, as well as some from out of the state. The officers elected are A. E. Gipson, Caldwell, President; W. C. Stone, Emmett, Vice-President; and M. L. Dean, Boise, Secretary-Treasurer.

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Financing a Young Orchard with Inter-Crops

(Continued from page 4)

and forth from the farm headquarters for the operations of cultivation would be a serious item. And in such cases it would be a fair question to raise whether the field had best be set to fruit trees, and if so, whether it was worth while to crop it at all.

A third point that is very desirable, though we would not find the unanimity of opinion or of practice on this point as on the other two, is that the crop be an annual one. If we can start work in the orchard each spring with a clean slate, it is a big advantage compared with our case when the block is tied up with a long term crop. I recall a block of peaches where half the orchard was in strawberries and the other half free. And one could tell at a distance just where the line between the two sections was located by the difference in the appearance of the peach trees. On the other hand, everyone who ever visited Hood River, Ore., in the early days when their orchards were young, will recall many instances of blocks of orchard where the trees were in prime condition and the strawberry crop among them was equally good. But in this case intensive cultivation was practiced; and with sufficiently intensive cultivation, it is quite possible to get around the difficulty.

One more point may be suggested, and that is that the less stirring of the soil our companion crop requires at harvesting time the better it will be for our fruit trees.

What Crops Shall We Grow?

Probably the best way for one to solve this question is to study the farming of his own locality and see what farm crops are paying dividends. If it will pay to grow potatoes in your locality outside the orchard, it ought to pay in the orchard, for there is little, if any, additional cost to growing the crop among the trees and what there is may be properly charged against the orchard.

The following are among the crops which are most satisfactory from the standpoint of the orchard, and which are most generally successful in the orchard sections of the United States and Canada.

1. Cabbage. This is one of the best crops since it is set late; it requires good culture; it is a standard crop so that a wagon load does not glut the market; and it is generally a profitable crop.

2. Late potatoes are excellent if one is in a potato section, and very few crops succeed over so wide an area of the county. Other farmers find them profitable, why should not the orchard farmer?

3. Squash are ideal if you can make them profitable, and if you are located in or near the "squash pie belt" it is usually possible to make them pay, provided you have the requisite knowledge. They do require skill.

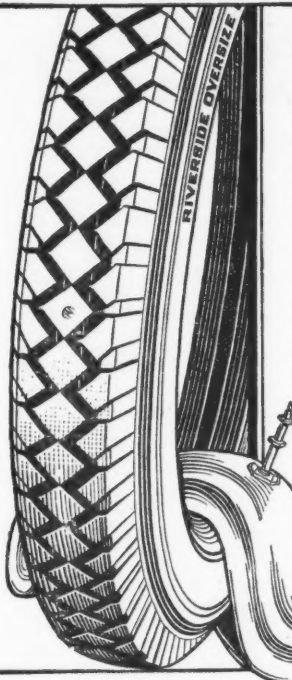
4. Beans of all kinds are good, provided they pay. White pea beans, yellow eyes, soy beans, and several others are grown as standard crops in many sections. Try them in your orchard if your neighbors make money out of them.

5. If handled right, corn (especially sweet corn and flint corn) will prove satisfactory.

6. And lastly there is the strawberry. I mention it with some hesitation, because it is by no means ideal from the standpoint of the orchard, as has already been suggested. But they are so generally profitable that one is hardly justified in ignoring them. If you have good strawberry soil, in a good strawberry section, with a good market available, and have a good enough back-bone so that you will see to it that your trees grow in spite of the strawberries being in the orchard, then go to it. But if any of these factors is lacking, particularly the last named, better think it over very carefully indeed.

I have not discussed filler trees, and probably I had better not. They are a

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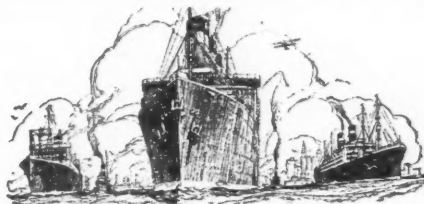
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Uncle Sam has made it easy for you to go. If you will send the coupon below, illustrated booklets will be sent you. One tells about the U. S. Government ships of the United States Lines and contains eight suggested low-price tours, the result of actual experience. The other is full of information on how to travel: passports, visas, baggage, duties, life at sea, etc. Send for this interesting information. All you have to do is mail the coupon. It puts you under no obligation.

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Shipping Nursery Stock to Distant Points

RECENTLY we collected some information for a foreign subscriber relative to the shipment of nursery stock from the United States. The following statement from the Department of Commerce may be of interest to our readers:

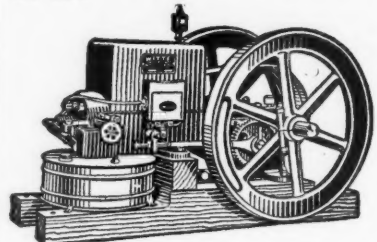
"An authority on the shipping of nursery stock tells me that it is entirely feasible to ship fruit plants, etc., from the United States to your part of the world (Asia Minor), provided young, healthy plants are selected. Certain precautions must, however, be taken. The roots of the plants must be wrapped in moistened sphagnum moss and afterwards covered with oiled or paraffined paper, while the tops of the plants should be left bare. After this has been done, the plants should be packed in substantial metal-strapped wooden cases and the latter should be well ventilated, with holes screened to prevent entrance of mice."

With such precautions, the report adds, nursery stock, packed in good condition, should arrive in sound condition in foreign ports a month or two after the date of shipment.

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Subscribe to the American Fruit Grower Magazine

Principles and Practices in Small Fruit Culture

By A. S. Colby

Suggestions for Spring Planting

THE OLD saying "well begun is half done" might well be taken to heart by the prospective small fruit grower as he sets out his plants in the early spring. Where fall planting is practicable, it is usually preferable, especially with currants and gooseberries since they come out into leaf so early in the spring. With strawberries, however, except pot-grown plants, and with the brambles and grapes, spring planting in the northern sections of the country is most common.

When spring planting is practiced, all nursery stock, and especially small fruits, should be planted as soon as the soil and weather conditions permit. It is not wise to plant when the soil is heavy and wet. Some nurserymen will not send the plants until the proper time for planting. If they are received before the ground is ready, it is best to heel them in carefully and wait for a favorable time. If they are allowed to remain in the original package for a short time, even though put in a cool place, they may be seriously injured. To heel-in, choose a well drained spot where the plants will not be disturbed, spade up the soil, and pulverize it as for planting, making several V-shaped trenches at least six inches deep and fairly close together. The plants come in compact bundles of 25 each, with a label in each bundle designating the variety. The bundles should be opened, the plants separated and spread out in the trenches, allowing the moist earth to come in contact with the roots. This precaution is highly important. Then firm the earth carefully about the plants. Do not allow the crowns of strawberry plants to be covered. The variety label placed at the end of each row prevents the mixing of varieties in the case of strawberries.

Distances for Planting

Planting distances vary considerably in different localities. They should be decided upon after local conditions have been carefully studied and the growth and fruiting habits of the plants understood. Too close planting puts a premium on good culture; it will be absolutely necessary to prune severely, feed liberally and in other ways give the best care to the patch if profitable crops are expected. Other disadvantages arising from crowding include the likelihood of trouble from insects and diseases and difficulty in cultivation, pruning, spraying, and picking because of lack of room to work.

Where the black raspberry is confined to narrow rows trellised up by wires, the rows may be five feet apart in soil of medium fertility. Where allowed to grow naturally, the distance between the rows must be greater; sometimes the rows are planted as far as nine feet apart.

Strawberries grown in a garden where intensive cultivation will be given may be planted in rows about two feet apart, with the plants 12 to 18 inches apart in the rows. On a commercial scale the rows are spaced up to four feet apart, permitting horse cultivation.

Blackberries naturally grow vigorously and produce numerous suckers from the roots. The plants are safely set to form a row from seven to nine feet apart if the surplus suckers are cut out each season, leaving only a narrow hedge row.

The planting distances for currants and gooseberries, as with other fruits,

will vary with the soil, the cultural methods to be employed, and the variety. With such varieties as Poor-man gooseberry and Perfection currant, grown in soil of good fertility, either under a mulch or good cultivation, the rows may be from four to eight feet apart, with the plants three to five feet apart in the row.

Marking Off the Field and Setting

Depending usually upon the size of the plantation, the field may be laid off with a marker and the ground opened to receive the plants either with a spade or by the plowing of furrows. In any event, the rows must be straight for ease in cultivation and other cultural operations.

Successful setting depends upon two things: the plants must be in good condition for the operation, and the soil must be in good condition to receive them. Plants should not be allowed to dry out before being set. In some cases the roots may need cutting back. In all cases the tops should be severely cut back. It must be kept in mind that root and top should be balanced at planting time to enable the newly set plant to establish itself the first season. Do not set the plant too low or too high. It is a good rule in planting strawberries to place the plant in the hole with the roots well spread out and the crown just above the level of the ground. The soil is then pressed firmly about the plant with the hands or feet, the plant being depressed slightly in the operation and left with its crown exactly at the ground level. This is an important factor in successful planting, for if the crown is too high or too low the plant will be killed. Another mistake often made is in not firming the soil sufficiently about the plant roots. It is well to test the work by jerking a leaf of a plant just set; if properly planted, the leaf will come away, leaving the plant in the ground.

Black raspberries and purple canes should be set so that the new tip from which growth will begin is just below the surface of the soil. Red raspberries, blackberries, currants, gooseberries and grapes should be set somewhat deeper than they stood in the nursery row.

Cultivation should begin the same day the plants are set and continued until the cover crop is sown. Where mulching is to be practiced, the mulch should be applied immediately after the plants are set. Weeds must be kept down, moisture conserved, and plenty of plant nutrients made available.

New Ladybird Introduced Into California

THE LOS ANGELES County Horticultural Commissioner's Office has recently supervised the importation from South Africa into California of a new ladybird species which is a natural enemy of mealy bugs. Part of the original shipment received last August by Prof. Harry S. Smith, of the Citrus Experiment Station at Riverside, Calif., from E. W. Rust, of the University of California, now stationed at Capetown, South Africa, was released in Los Angeles county. It is believed the ladybird species can be reared readily under California conditions. The ladybird species which have been imported feed voraciously on mealy bugs in South Africa, and it is hoped they will do the same in California.

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Watch Out for Canker Worms

CANKER worms may not be serious for a number of years and this fact causes many growers to be somewhat careless about the treatment of this pest. Canker worms may become serious at any time, and it is always advisable to pay close attention to the reports of entomologists, to examine the trees for evidence of their presence, and to be prepared to give them prompt and vigorous treatment. The following recommendations have been issued by the entomologists of the Pennsylvania Department of Agriculture:

"Canker worms can be eradicated by a careful and thorough spraying with lead arsenate, at the rate of one and one-half pounds of powdered lead arsenate to 50 gallons of water in the spring or early summer when the worms are first seen. Two pounds of the poison should be added to the same quantity of water if the spraying operation is delayed until the worms are half-grown.

"When it is impractical to spray the trees, the canker worms may be controlled by sticky bands, tree tangle-foot, or similar material, which may be applied directly to the bark or on bands of heavy paper or cotton batting closely drawn around the tree. These bands should be placed during the spring for the first appearance of the worms, and during October for the fall species—the latter should be kept in a sticky condition until the following May to prevent both the wingless adult females and the newly hatched caterpillars from ascending the tree.

"Canker worms are known to most fruit growers and farmers, and may be distinguished from many other caterpillars by their looping habit, which gave them the name of 'loopers' or 'measuring worms.' They are about three-fourths of an inch long, and pale green or dark brown in color, varying with age and condition. These worms devour all sorts of leaves, but are specially active on apple and pear trees."

The Fruit Grower and Himself

THE NUB of Dr. Bailey's article in the January issue of this paper will bear repeating. "By following the occupation or trade or profession eagerly does a person maintain his enthusiasms and his youth; and, what is more important, he encourages productive effort in himself and in his fellows; thereby does he make himself a man."

With this as a text, allow us to say that the fruit grower is exposed to many suggestions; some arbitrarily put, others offered for such help as they may afford. It is a true index of the progressive and eager spirit of the American fruit grower that he supports research, attends meetings, encourages frank discussion of his problems, and reads rather widely. But, after all, none knows better than he that his living is made by himself, that all these suggestions must be evaluated, and then what appeals to his better judgment taken, thus adding to his fund of knowledge. No greater injustice could be imposed than to give him the impression that he is all wrong in his methods, rob him of confidence in himself, and leave little to take its place. It is to be hoped that in the horticultural family such contacts are not made, for one's greatest possessions are belief in his God and confidence in himself, and by making use of them does one "make himself a man."—J. H. Gourley.

New Minnesota Plums

FRUIT breeders of the University of Minnesota have added another plum to that great galaxy of plums, the Underwood, Tonka, Red Wing, Mound, Mendota, and others developed by them in previous years. The new plum, heretofore known only as Minnesota No. 157, has just been christened

the Radisson, after one of the Northwest's early explorers.

The Radisson is even earlier than other university plums. "Its quality," says W. H. Alderman, Chief of the division of horticulture, "ranks with the highest. It is a very large fruit, several times the size of De Soto for instance, and is beautifully colored with deep, rich red, and has yellow flesh, sweet and juicy. It is one of the most promising of the new plum varieties."

Minnesota No. 144, a plum-cherry hybrid, developed by university men at the State Fruit Breeding farm, has been given the name of Nicollet and is said to be the nearest approach to a true sour cherry that has yet been obtained. The fruits have small, round, cherry-like pits, which may be squeezed free from the flesh, and have a real cherry flavor. The Nicollet ripens the last of August and is sufficiently hardy for most locations in Minnesota.

Damage From Cut Worms Can be Reduced

CUT WORMS often cause serious damage to some small fruits, vegetables and other crops. Because of reports of serious damage to strawberries and blackberries in 1924, the entomologists of the New York State Agricultural Experiment Station at Geneva gave the following directions for controlling this insect.

For quick results an inexpensive poison bait is recommended, either broadcasted in the field or, in the case of small fruits, sprinkled about the bases of the plants. The following formula will provide enough material for five acres:

Bran, 20 pounds; paris green, one pound; cheap syrup, two quarts; three lemons and three and one-half gallons of water. The bran and paris green are mixed dry. The juice of the lemons is squeezed into the water and the peel and pulp chopped to fine bits and added to the water. The syrup is then dissolved in the water and fruit mixture and the liquid stirred into the bran thoroughly in order to dampen it evenly. If a smaller quantity is wanted, the amounts of the different ingredients may be reduced proportionately. It is recommended that the poison bait be applied in the evening, because the cut worms are night-feeders and the bait will thus be in a fresher condition than if applied earlier in the day.

Currant Growing Increasing in Importance

(Continued from page 10)

ing white varieties, the White Grape probably being a little more productive.

The latest currant to ripen, of commercial importance, is the Prince Albert or Rivers Late Red. This will hang on the bushes almost a month after the other currants are gone. There is a small patch of this variety near Stanley, N. Y., in good condition that was planted 35 years ago.

AS A RESULT of the success of a tractor school conducted by the Ford Motor Company, the Johnson County (Ill.) Farm Bureau made arrangements with the Bean Sprayer Company for a sprayer school to be conducted at New Burnside on February 24-26. Owners of Bean sprayers were invited to bring in their rigs for repair. Each outfit had to be accompanied by its owner or an employee. Other persons who attended were assigned to assist those who brought any machines to repair.

The Florida State Horticultural Society will hold its annual meeting at Eustis April 7-10. A full and varied program will be presented. In addition, there will be a flower show, boating, automobile trips, and other features. A large attendance is expected at the coming meeting.

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Mr. Stenfort's experience may seem amazing, but it is only typical of thousands of users of this new method of killing rats, mice, gophers and other rodents. Greedily eaten on bait. Harmless to humans, poultry, pets, stock, etc. Gives the pests a fever, and they die outside hunting air and water.

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Profitable Poultry



By H. A. Bittenbender

Artificial Brooding and Feeding of Chicks

IT WAS only a few years ago that the majority of chicks were brooded on the farms by the old hen. With the rapid growth of the poultry industry and the demand for early fall eggs, the hen was discarded and artificial methods of brooding were installed.

There was really a double reason for discarding the hen as a brooder. In the first place, the hen's time is too valuable, and in the second place, the labor of brooding many small groups of chicks was enormous. Whatever method is used in supplying heat for brooding chicks, there are certain fundamental principles that should be kept in mind.

Managing the Artificial Brooder

The brooder should first be disinfected with a five per cent solution of standard stock dip. The floor should be covered with from an inch to an inch and one-half of fine sharp sand. Over this is spread a light litter of fine cut straw, alfalfa, or clover hay. Chaff from the barn floor is also good. Dryness of the sand is insured by operating the brooder several days before the chicks are put in. This also dries out the brooder after it has been disinfected, and it gives the operator an opportunity to become familiar with its operation and repair or adjustment of working parts.

Before the chicks are placed under the hover the brooder should have obtained and held for a short time temperatures varying from 75 to 100 degrees. If the brooder does not hold an even heat with satisfactory house conditions, the thermostat is probably punctured and may need to be replaced by a new one.

Care of the Chicks

For the first week a temperature of 90 to 95 degrees at chick level, halfway between the heater and the edge of the hover, is necessary. The second week, 85 to 88; the third and fourth, 80 to 85; the fifth, 75 to 80; and the sixth, 70 to 75. These temperatures are approximate and will vary with the housing and weather conditions.

The action of the chicks is the guide in the amount of reduction. When chicks are comfortable, they spread out quietly under the edge of the hover at night. If they close in near the heater and pile up, they do not have sufficient heat. If they form a wide circle or go to the corners, the heat is too great. Crowding in the corners is avoided by rounding them with building paper or keeping the house cool enough so that the chicks will go to the brooder to get warm. Care having been taken not to chill the chicks when transporting them from the incubator, they are placed under the brooder. This is preferably done in the morning so that the chicks may learn where to get warm during the day. For the first day or two a circle made of building paper or chick wire is extended within about a foot of the edge of the hover to keep the chicks from wandering too far from the heat. A little chick grit and sour milk or buttermilk is placed in front of them about 48 hours after they are hatched.

From the start, any chick that is crippled or of weak vitality is removed. Chicks patted up behind indicate usually improper feeding. Un-

less these patches are moved, the chicks die. It is better to slightly underfeed and underheat brooder chicks than to overfeed or overheat them. Care in the management of the brooder and feeding often, a little at a time, overcomes either tendency. After the second day, if the chicks have become accustomed to the brooder, the guard is removed. If the third morning is bright, the chicks are forced out on the ground even though the snow must be scraped away. At the end of the week the chicks are forced out on the ground every day to prevent them from getting leg weakness. A good sized yard is built to keep the chicks away from the old hens and other chicks of a different age. At the end of six or eight weeks, the chicks usually do not need the heat any more.

Feeding of Chicks

Many different methods of feeding chicks give good results. It is the writer's opinion that a variety of feeds, regularly fed in sufficient quantity, but not in excess, is the best plan to follow. The Iowa Experiment Station found the following method of feeding to give very good results in rate of growth, in low mortality, and in the production of strong, vigorous, healthy chicks:

When the chicks are first placed in the brooder give them an opportunity to drink all the fresh buttermilk that they care for. This may be provided after they are 48 to 72 hours old. If buttermilk is used instead of water to start out the chicks, it seems to give them more strength and allows the digestive system to get into better working order.

There is a difference of opinion as to whether it is better to start the chicks out on grain or on mash. We have secured little better results by starting the chicks out after they are 72 hours old on both mash and grain. The grain mixture that is used is made up as follows:

- 1 pound finely cracked corn.
- 1 pound cracked wheat.

After the third week, gradually work in coarser cracked corn and coarser cracked wheat until the rolled oats is eliminated entirely, and a mixture of equal parts of corn and wheat is used. After the chicks are 10 to 12 weeks old, they can be put on a ration of two parts cracked corn and one part whole wheat.

The mash that is fed in the start is made up as follows:

- 2 pounds bran.
- 2 pounds standard middlings.
- 2 pounds fine cornmeal.
- 1 pound buttermilk (dried).
- 3/4 pound bone meal.

If the dried buttermilk cannot be secured, a commercial buttermilk chick mash may be used, or a high grade of commercial poultry meat scraps may be substituted.

The mash should be fed in an open, self-feeding hopper, accessible to the chicks at all times. It is not a good idea to put too much out at a time. It is better to give them a little at a time and make them clean it up. It is not so apt to get dirty, and the chicks relish it much better. Fresh buttermilk may be kept before the chicks in place of water, or some water may be provided. If fresh buttermilk is not available, keep the dried buttermilk in the mash until the



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chicks are 10 to 12 weeks old. After this time part of the dried buttermilk may be replaced with 60 per cent protein tankage.

After the fourth week half of the bran may be replaced with shorts and the chicks gradually worked onto a mixture as follows:

- 200 pounds ground corn and oats.
- 100 pounds bran.
- 100 pounds middlings.
- 60 pounds dried buttermilk.
- 40 pounds tankage.

All of the infertile eggs and dead germs that are tested out of the machine should be hard boiled, ground up, and mixed with a sufficient quantity of the mash so that the mixture is moist and crumbly, and should be fed once or twice a day. It seems as though the hard boiled eggs give the chicks an excellent start, and where available they should be fed in liberal quantities. All the chicks will clean up twice a day in 10 to 15 minutes is not too much.

Bananas Susceptible to Weather Conditions

BANANAS are consumed in large quantities by the United States. The annual imports amount to about 45,000,000 bunches. The marketing and distribution of this fruit is a highly organized business. Bananas are very susceptible to weather conditions, especially low temperatures, and protective measures must be employed. Refrigeration cannot be used because of its effect in spotting the fruit. Shipments are made in ventilator cars, which are either accompanied by attendants or are looked after by messengers en route, who adjust the ventilators according to conditions expected before the next station is reached.

The manager of a southern division recently reported serious loss from sudden drops in temperature because an agent at a certain station had not been correctly advised of approaching cold weather and had failed to properly adjust the ventilators. Appeals to the United States Weather Bureau for assistance brought special service in this case. The company furnished a chart showing its shipping routes and the location and names of its agents. The government men divided the area into zones and weather bureau officials were assigned the duty of giving the various zones advance information as to expected weather conditions. In accordance with this arrangement, whenever a drop in temperature is expected within the coming 24 to 36 hours, a telegram is sent, at the expense of the company, to the fruit company messengers in the area to be affected. This service has proved highly beneficial.

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AGENTS—WRITE FOR FREE SAMPLES. SELL Madison "Better-Made" Shirts for large manufacturer direct to wearer. No capital or experience required. Many earn \$100 weekly and bonus. Madison Corporation, 503 Broadway, New York.

CLEAN YOUR CAR FOR 5c. DRI-KLEAN-IT removes mud, dirt, dust. No soap or water. Agents wanted. Write American Accessories Co., Dryclean 103, Cincinnati, Ohio.

PLANTS—SEEDS

FROSTPROOF CABBAGE PLANTS—FIELD hardened, can be set six weeks before home-grown plants, and will head four weeks earlier. Early Jersey and Charleston Wakefield, Copenhagen Market Succession, Flat Dutch. Prices: 100, 50c; 500, \$1.10; 1000, \$2.00, postpaid. Express collect: 1000, \$1.25; 5000, \$5.00. Other plants in season. Write for catalog. Piedmont Plant Company, Albany, Ga.

FROST-PROOF CABBAGE AND ONION PLANTS, leading varieties, immediate shipments, postpaid 500, \$1.10; 1000, \$2.00. Express 1000, \$1.25; 5000, \$5.00. Will ship C. O. D. Cauliflower, lettuce and tomato plants. Catalog free. Satisfaction guaranteed. Omega Plant Co., Omega, Ga.

FOR SALE—WASHINGTON RUSTPROOF asparagus plants, the variety originated by Department of Agriculture. Grown from best seed obtainable. Detailed cultural directions with order. Thousand, \$5; hundred, \$1.50. C. E. Durest, Wheaton, Ill.

FROST PROOF CABBAGE PLANTS, VARI- eties; Early Jersey Wakefield, Charleston Wakefield, Flat Dutch, Succession Copenhagen Market. Price 500 for \$1.25, 1000 for \$2.25, postpaid. By express 1000 for \$1.50. Special prices on large lots. Full credit and satisfaction guaranteed. Piedmont Plant Co., Greenville, S. C.

NEW GIANT MASTODON EVERBEARING strawberry. Champion everbearing direct from originator. 250 plants, \$3.00. Catalogue free. Ed. Bubke, New Buffalo, Michigan.

DAHLIAS—TWELVE DIFFERENT VARIETIES and colors for \$1, prepaid. Canas same price. List free. W. E. Severs, McLeansboro, Ill.

COOPER, PROGRESSIVE EVERBEARING strawberry plants. True to name. 100, \$1.50. Ethel Matthews, Niles, Mich.

GIBSON STRAWBERRY PLANTS—BEST MAIN crop varieties, \$3.50, 1000; \$32.50, 10,000. O. Kiger Nursery, Sawyer, Michigan.

CONCORD GRAPE PLANTS—BIG SUPPLY, ONE year and two year, \$18.00, 1000 up. O. Kiger Nursery, Sawyer, Michigan.

READ OUR DISPLAY ADVERTISEMENT ON another page. O. Kiger Nursery, Sawyer, Mich. 36 BLOOMING SIZE GLADIOLI BULBS, \$1.00. O. Kiger Nursery, Sawyer, Michigan.

PATENTS AND TRADE-MARKS

"PATENT PARTICULARS" AND ADVICE ON trade-marks, free. Write, Sterling Buck, W-629F, Washington, D. C.

The Secondary Branch

By Frederick E. Cole

Nashoba Fruit Growers' Association

THE SECONDARY branch of an apple tree is the horizontal fruiting branch extending outward from the leader limb.

There are several of these secondary branches on every leader, the exact number depending upon the variety, age of the tree, and how it has been pruned.

The most important factors to be considered in discussing the secondary branch are strength and position or exposure, as we are concerned with the quality and quantity of the fruit we get and the ability of the limb to carry the load.

A wide angled crotch is necessary for the limb to carry any sizable load, but, fortunately, it is not nearly as difficult to get a wide angled crotch with this limb as it is with the leader at the trunk. The mid-rib should be left in every branch possible, as it is these branches which are the strongest and best developed. There ought to be many small limbs on both sides of the main limb in the middle making a flat branch with many spurs.

Both the quality and the quantity of the fruit on the secondary branch is greatly influenced by its exposure to sunlight, and it is very difficult for most of us to appreciate the full extent to which this is true. Some of the direct results of sunshine are as follows:

1. The leaves are larger and more vigorous and do more work when the sun shines on them daily.

2. There is more plant food available for spurs and new shoots when the leaves are working to full capacity.

3. Blossom buds are made regularly and frequently only when the spur leaves are uninjured and exposed to sunlight.

4. A good percentage of blossoms set fruit only when there is plenty of plant food material available from the nearby leaves.

5. The fruit is dependent on the leaves in its immediate vicinity for nearly half of its development, so that when the leaves are shaded the fruit is undersized.

6. Only the fruit in the sunlight gets colored sufficiently to realize the most money on the market.

7. The fruit grown in the sunlight keeps better than the fruit grown in the shade.

The ideal fruiting branch is one that has the most amount of surface exposed to sunlight. To have this condition, it is necessary to have plenty of spurs on fruiting branches and to have these branches spreading and thin, something like a horizontal fan.

In ordinary pruning practice this means the removing of those limbs that are growing directly over the permanent and important fruiting branches. When two or three limbs are growing in the same vicinity, they shade each other and none of them develop the way we want them to. It also means removing the limbs growing up from the horizontal limbs. They often lean over and shade the main branch before the summer is over. It is also necessary to remove the limbs growing downward from the main limb because they shade the limbs beneath and hinder in spraying.

"AMERICAN FRUITS," by Samuel Fraser, is the title of a new book recently printed by the Macmillan Company of New York, containing about 900 pages. The author was formerly connected with Cornell University. He has had extensive practical experience in growing fruits and vegetables and in recent years he has been engaged in the transportation and distribution of perishables.

The book treats a wide variety of subjects, including every phase of fruit growing and every important fruit crop. More attention is given to the apple than to any other fruit because of its prominence. The book will prove useful for practical growers and for teachers and investigators in high schools, colleges and experiment stations. The price of the book is \$4.75.

How many products have you stuck to for twelve years?

A gentleman in Georgia has smoked one pipe tobacco since 1912

For considerably more than 4,000 consecutive days, Mr. Fuchs, of Atlanta, has filled his pipe with the same kind of tobacco and found satisfaction therein.

Before he settled on Edgeworth, in 1912, this veteran smoker had "tried 'em all." And since then he undoubtedly has heard the praises of other good tobaccos sung by fellow smokers.

But Mr. Fuchs stays sold—stays put. Because, he says, for a cool, pleasant, long smoke there is nothing to equal it. Other smokers who seek that kind of smoke should read his letter.

Larus & Bro. Co.,
Richmond, Va.

Gentlemen:

It has been my desire to write you for the past twelve years, ever since I have been smoking "Edgeworth."

I used every well known brand until I tried Edgeworth and have stayed in the ranks of Edgeworth smokers ever since. I have during that time mustered quite a number of recruits into the army of real pipe joy.

Edgeworth is truly the aristocrat of smoking tobacco. For a cool, pleasant long smoke, there is nothing to equal Edgeworth.

Wishing you further success, I remain,
Yours very truly,
Eugene A. Fuchs.

To make every pipe smoker a member of the Edgeworth Club eventually is not our "big idea." That would be against common sense, for everyone does not like Edgeworth—we know that.

But for men like Mr. Fuchs who do enjoy it, we keep Edgeworth uniform year in and year out. That's probably why the Edgeworth Club has so many life members.

If you haven't as yet formed an opinion of Edgeworth, now is as good a time as any to do so.

Let us send you free samples of Edgeworth so that you may put it to the pipe test. If you like the samples, you'll like Edgeworth wherever and whenever you buy it, for it never changes in quality.

Write your name and address to Larus & Brother Company, 13D South 21st Street, Richmond, Va.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Edgeworth Ready-Rubbed are packed in small, pocket-size packages, in handsome humidor holding a pound, and also in several handy in-between sizes.

We'll be grateful for the name and address of your tobacco dealer, too, if you care to add them.

To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Edgeworth Ready-Rubbed for the same price you would pay the jobber.



Precooling—By All Means!

By A. C. Weld

THE FIRST spring strawberries in the Puget Sound country ripen at Olalla. To get to Seattle and the market, the berries have to be shipped across Puget Sound. A special boat is used to come in the evening for a load of fragrant berries.

In the early days, Olalla berries were famous because they kept fresh. They stood up under shipping better than any other berries on the market, and they brought a better price. Everyone thought that the soil or growing conditions of Olalla possessed special advantages. But as the crops got larger and the boat was heavily packed, Olalla berries lost their charm and became as other berries. They didn't stand shipping any better than other berries, and they didn't bring any better prices.

That is how the berry growers of Puget Sound learned the value of pre-cooling, for it was discovered that what had given Olalla berries their advantage over other berries was the night trip across the cool waters of the Sound. The berries had been chilled right after picking and before shipping to market.

Washington, with her \$100,000,000 fruit crop, is "the best place to raise berries and the poorest place to market them," according to A. G. Webb, in the inspection service of the United States Department of Agriculture in Seattle. In 1923, \$10,000,000 worth of berries and \$50,000,000 of apples, in which crop Washington leads the nation, were raised in the state, and that does not represent the state's capacity. It is not a case of over-production, but a lack of machinery for taking care of the crop. Three or four times as much fruit could be raised, Mr. Webb believes, if it could be taken care of by canning, preserving or extended market. And the solution of the problem of extending the market seems possible by means of pre-cooling. Pre-cooling fruit is the process of chilling the fruit immediately after picking, before it is shipped, put on the market or stored.

Pre-cooling was first used for the citrus fruits in California but its success has extended its use to the so-called soft fruits, which include principally berries of all kinds, and pears. While experiments with cherries and prunes have been successful, under the supervision of the Bureau of Plant Industry in Oregon, too much previous care in handling the fruit is necessary to make it commercially practicable so far.

Two Methods of Pre-Cooling

There are two general methods of pre-cooling. The first method evolved was to make cold air artificially and blow it from the pre-cooling plant into cars which were loaded with fruit. Crates in cars loaded for shipment are packed together very tightly to prevent slipping and damaging the fruit; however, it was found that only the outside layers of crates were being benefited and much of the fruit in the center of the car spoiled as heavily as ever.

The second and more commonly used method is to stack the crates in piles, separated by six-inch aisles, in heavily insulated rooms where the air is cooled, and leave them until chilled to the required temperature. The crates are then packed into the refrigerated cars and shipped. This method involves one more handling and a day's delay in shipping, but the fruit lasts and gets to market in so much better condition that it pays to take the pains.

What makes pre-cooling so valuable to the fruit industry is that the organisms which cause rot and decay in the fruit in transit cannot grow in cold temperatures, and if the fruits are cooled quickly after picking, any infection which may have gotten into the berry through a crack in the skin will not develop and the berry will remain sound. The skin of fruits, espe-

cially of berries, is much more impervious to injury when cold, and, since infection enters the berry only through a break in the skin, this helps to prevent the spread of rot and mould.

In the absence of plants built for the purpose, it was found in the south that washing and packing wet berries that had been picked in the sun, when the berries were to be shipped in refrigerated cars, gave good results due to the evaporation of the water, which cooled the berries. But in the air-cooled plants, moisture on the berries is injurious.

Designing the Pre-cooling Plant

In designing the pre-cooling plant, the first consideration is to have the room or rooms where the fruit is to be cooled well insulated. Cork insulation is the best but it is expensive. Plants are usually built with double walls lined with building paper and separated by a 12-inch space filled with planer shavings or sawdust. Planer shavings are considered to be better, as the air spaces add to the insulation and the shavings do not mould, while sawdust occasionally does.

The rooms are cooled by the ammonia process. Coils extend over the ceiling and part of the walls. Ammonia, which has been liquidized by pressure, passes through a valve and is circulated through the coils. In changing back to gas, which it does when released from pressure, the ammonia needs heat. It takes this heat from the air surrounding the coils in the room and thus cools the room. The gas flows back into the compressor, where it is again liquidized and started on the circuit.

The complete plant consists of a loading platform where the crates of berries are loaded from the field and sorted for shipping, the compressor and insulated rooms, and the siding where the berries are loaded from the pre-cooling rooms into the refrigerated cars.

The average size of the pre-cooling room is 20 by 30 feet, with a 10-foot ceiling. This room will hold two carloads of crated fruit, or 1500 crates, and to accommodate more fruit at one time the plant should be built in units of approximately this size. The system becomes less efficient in larger units. A two-room plant, as described recently built at Auburn, Wash., cost \$8500, of which \$3500 was for mechanical equipment.

With proper development of pre-cooling systems, northwest fruit can be marketed fresh to the entire east and there will be a demand for several times the present total crop. Fruit is now shipped to Chicago, and has been sent as far as New York.

The berry crop is the one especially concerned in the northwest. Citrus fruits are largely produced in California, Bartlett pears in California and Washington, and the acreage in Bartlett's planted in Washington will probably increase 50 per cent in the next five years. But strawberries and raspberries have large plantings in Washington and Oregon, and loganberries are commercially produced only in these two states.

Decay Causes Collapse of Strawberries

Investigations have shown that most of the losses in shipping strawberries have been caused by a fungous organism commonly called Rhizopus Rot. This decay is characterized by a collapse of the berries and a loss of juice, which stains the boxes.

This loss of juice is often referred to as "leakage" of the berries and occurs where the skin has been broken and the infection has had a chance to enter. The decay can be held almost completely in check by temperatures no lower than 46 to 50 degrees Fahrenheit, if the berries are cooled to that temperature immediately after picking; but the development of the decay is exceedingly rapid at high tem-

peratures, and the necessity for reducing the strawberries to a temperature of 50 degrees or below immediately after picking has been demonstrated by careful experiments.

Because of this necessary speed in cooling the berries after picking, it is impracticable to install the pre-cooling plant more than 20 miles from the field. Not enough saving of the crop is made after a delay occasioned by a longer trip from the field to the plant to offset the waste already begun.

Pre-cooled berries must be marketed sooner after their removal from the refrigerated cars than other berries, but the proportionate gain in the size of the crop which it is possible to get on the market and the benefits to berry shipping seem to overbalance this disadvantage. Properly developed, either by co-operative marketing associations or private concerns, pre-cooling bids fair to prove one of the most valuable modern aids to the fruit grower.

Vermont Orchardists Improve Cultural Methods

By M. B. Cummings
University of Vermont

ANSWERS to questionnaires recently sent out indicate that Vermont orchardists desire to further perfect their methods of culture. Better quality products are still the aim of the growers. A search for markets is not a serious matter, for already the Vermont McIntosh and Fameuse top the New York market as regards price, and inquiries are being received in the state as to where orchards can be bought.

What the growers want just now is more specific information on the use of nitrate and how to overcome the probable sterility of the McIntosh.

Nitrogen for Orchards

Nitrogen in available form, such as nitrate of soda or ammonium sulphate, is a very important fertilizer for orchard trees. Numerous experiments in recent years have shown that nitrogen is the most important plant food. Some orchardists have come to the point of using nitrate of soda to the complete exclusion of potash and phosphoric acid. Whether this practice will prove wise in the long run for bearing trees is a question of doubt. Further long-time studies may answer the question. Meanwhile, one may ask what is the most desirable amount of nitrate of soda to use per tree? Manifestly, this depends on the age of the tree and the fertility of the land. In New Hampshire as much as 12 pounds for four-year-old trees has temporarily been effective, but this seems excessive, perhaps wasteful, if continued. In Maine, liberal applications of nitrate of soda have returned an increase in yield of a barrel of apples for 20 cents invested in nitrate, according to Dr. Karl Sax. Surely, this is a good return. Figure it in percentage. Compare it with other investments.

A safe rule at the present time is to increase the amount each year by one-fourth pound per tree. This means a tree one-year set may receive one-fourth pound, and a tree four-years set may receive one pound. Instances may be found where more could be used to advantage. In such cases, good judgment and familiarity with local conditions rather than rule should be the guide.

There is nothing in the recent experiments which indicates that good wood and foliage growth in any way militate against fruit production; in fact, the two seem inseparable for good results. A foot of linear growth is not too much for twigs to make each year. If much less than this is received, more fertilizer can be used to advantage or better cultural treatment given.

Is the McIntosh Self-Fertile?

It has long been known that many varieties of fruits are self-sterile and therefore require cross-pollination.

There are some indications that the McIntosh may be in this class, despite the opinion long held by some people that it is self-fertile. Experiments in Ohio in 1923 and 1924 show that *out there*, the McIntosh does not set fruit without cross-pollination. Among the best pollinizers are Delicious, Wealthy, King, Fameuse, Yellow Transparent, Oldenburg, Wagener, and Red Astrachan, while Baldwin and Rhode Island Greening are not good pollinizers for the McIntosh.

With the heavy plantings of McIntosh in Vermont, it is well to recognize the possible self-sterility of this variety, to intergraft varieties that are good pollinizers, and to be sure there are plenty of insects or domesticated bees to carry the pollen. Some Vermonters have complained of the poor set of McIntosh trees. Any system of orchard management is only as strong as its weakest link. It is well, therefore, to study the weak link in all production work. Strengthen the weak links if you can.

Apple Scab Can Be Controlled

Two points of foremost importance in the control of scab are the early sprays—namely, the prepink and the pink—and the application of spray in good season, preferably before rains, as the rainy period is the infection period. A pre-rain spray is worth a great deal. It is highly advisable to advance the pink or pre-pink spray a day or two, perhaps more, if by so doing the primary infection can be forestalled and later infection thereby reduced even if not entirely prevented. If the grower is ready, he can often take advantage of forecasted storms and get a larger measure of protection than would otherwise be possible.

Timely application of sprays may be called good luck, but more often it is a matter of foresight and psychological activity. "Do your orchard shopping early." The pre-pink, pink, and calyx sprays are king pins to the control of orchard pests. To get better results than were obtained last year, one should do two things: first, adopt an up-to-date spray program, and, second, study the weather. Spray before rather than after rains. Hold fast that which is good; improve that which is poor.

It takes brains to grow fine fruit in these times, and since brains are limited, the danger of over-production is not imminent. But with brains use nitrate, keep bees, and spray early.

Melanose of Citrus Fruits

THE BEST time to spray for melanose of citrus fruits is early in the spring, or, to be exact, from 10 to 20 days after the blossoms open, according to O. F. Burger, plant disease specialist at the Florida Experiment Station. It is impossible to control this disease effectively by spraying in the fall and winter.

"Melanose is caused by a fungus which lives in the dead branches and terminal twigs of the citrus tree," Dr. Burger says. "During rainy seasons the spores, or seed-like bodies, of the fungus are washed down to the young leaves and fruit. If the fruit was not sprayed early in the season and if there is melanose in the grove, the spores have already reached the fruit and it is now too late to spray."

"To spray with Bordeaux-oil early in spring—from 10 to 20 days after the blossoms open—means that the young fruit is covered with a thin film of the spraying material which keeps the spores of the disease from entering the fruit's tissues and thus causing the disease."

"All the spraying in the world with all the material possible to apply will not remove the effects of the disease which has been allowed to develop throughout the season. When once within the tissues of the fruit, there is no remedy."

"Citrus growers should prune out and burn all dead wood from their trees in the fall and winter, and spray the trees with Bordeaux-oil in spring just about 10 or 20 days after the blossoms appear. That, and that alone, will control the disease."

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Nitrogen in available form, such as nitrate of soda or ammonium sulphate, is a very important fertilizer for orchard trees. Numerous experiments in recent years have shown that nitrogen is the most important plant food. Some orchardists have come to the point of using nitrate of soda to the complete exclusion of potash and phosphoric acid. Whether this practice will prove wise in the long run for bearing trees is a question of doubt. Further long-time studies may answer the question. Meanwhile, one may ask what is the most desirable amount of nitrate of soda to use per tree? Manifestly, this depends on the age of the tree and the fertility of the land. In New Hampshire as much as 12 pounds for four-year-old trees has temporarily been effective, but this seems excessive, perhaps wasteful, if continued. In Maine, liberal applications of nitrate of soda have returned an increase in yield of a barrel of apples for 20 cents invested in nitrate, according to Dr. Karl Sax. Surely, this is a good return. Figure it in percentage. Compare it with other investments.

A safe rule at the present time is to increase the amount each year by one-fourth pound per tree. This means a tree one-year set may receive one-fourth pound, and a tree four-years set may receive one pound. Instances may be found where more could be used to advantage. In such cases, good judgment and familiarity with local conditions rather than rule should be the guide.

There is nothing in the recent experiments which indicates that good wood and foliage growth in any way militate against fruit production; in fact, the two seem inseparable for good results. A foot of linear growth is not too much for twigs to make each year. If much less than this is received, more fertilizer can be used to advantage or better cultural treatment given.

Is the McIntosh Self-Fertile?

It has long been known that many varieties of fruits are self-sterile and therefore require cross-pollination.

There are some indications that the McIntosh may be in this class, despite the opinion long held by some people that it is self-fertile. Experiments in Ohio in 1923 and 1924 show that out there, the McIntosh does not set fruit without cross-pollination. Among the best pollinizers are Delicious, Wealthy, King, Fameuse, Yellow Transparent, Oldenburg, Wagener, and Red Astrachan, while Baldwin and Rhode Island Greening are not good pollinizers for the McIntosh.

With the heavy plantings of McIntosh in Vermont, it is well to recognize the possible self-sterility of this variety, to intergraft varieties that are good pollinizers, and to be sure there are plenty of insects or domesticated bees to carry the pollen. Some Vermonters have complained of the poor set of McIntosh trees. Any system of orchard management is only as strong as its weakest link. It is well, therefore, to study the weak link in all production work. Strengthen the weak links if you can.

Apple Scab Can Be Controlled

Two points of foremost importance in the control of scab are the early sprays—namely, the prepink and the pink—and the application of spray in good season, preferably before rains, as the rainy period is the infection period. A pre-rain spray is worth a great deal. It is highly advisable to advance the pink or pre-pink spray a day or two, perhaps more, if by so doing the primary infection can be forestalled and later infection thereby reduced even if not entirely prevented. If the grower is ready, he can often take advantage of forecasted storms and get a larger measure of protection than would otherwise be possible.

Timely application of sprays may be called good luck, but more often it is a matter of foresight and psychological activity. "Do your orchard shopping early." The pre-pink, pink, and calyx sprays are king pins to the control of orchard pests. To get better results than were obtained last year, one should do two things: first, adopt an up-to-date spray program, and, second, study the weather. Spray before rather than after rains. Hold fast that which is good; improve that which is poor.

It takes brains to grow fine fruit in these times, and since brains are limited, the danger of over-production is not imminent. But with brains use nitrate, keep bees, and spray early.

Melanose of Citrus Fruits

THE BEST time to spray for melanose of citrus fruits is early in the spring, or, to be exact, from 10 to 20 days after the blossoms open, according to O. F. Burger, plant disease specialist at the Florida Experiment Station. It is impossible to control this disease effectively by spraying in the fall and winter.

"Melanose is caused by a fungus which lives in the dead branches and terminal twigs of the citrus tree," Dr. Burger says. "During rainy seasons the spores, or seed-like bodies, of the fungus are washed down to the young leaves and fruit. If the fruit was not sprayed early in the season and if there is melanose in the grove, the spores have already reached the fruit and it is now too late to spray."

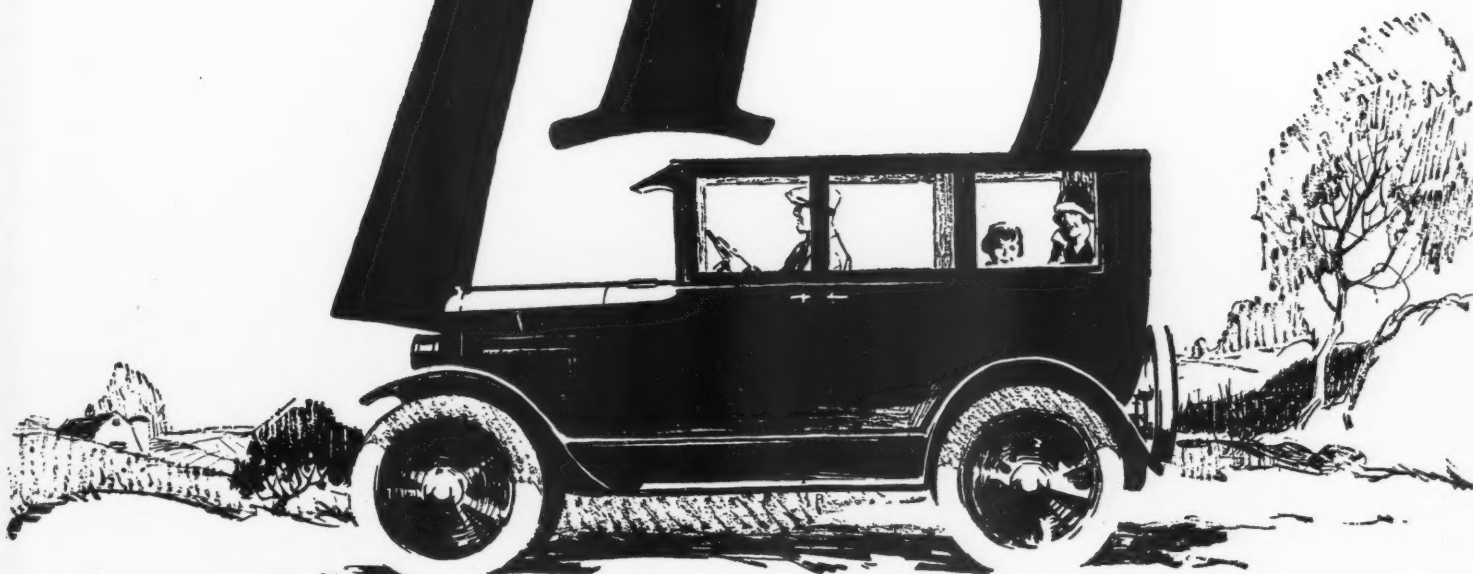
"To spray with Bordeaux-oil early in spring—from 10 to 20 days after the blossoms open—means that the young fruit is covered with a thin film of the spraying material which keeps the spores of the disease from entering the fruit's tissues and thus causing the disease."

"All the spraying in the world with all the material possible to apply will not remove the effects of the disease which has been allowed to develop throughout the season. When once within the tissues of the fruit, there is no remedy."

"Citrus growers should prune out and burn all dead wood from their trees in the fall and winter, and spray the trees with Bordeaux-oil in spring just about 10 or 20 days after the blossoms appear. That, and that alone, will control the disease."

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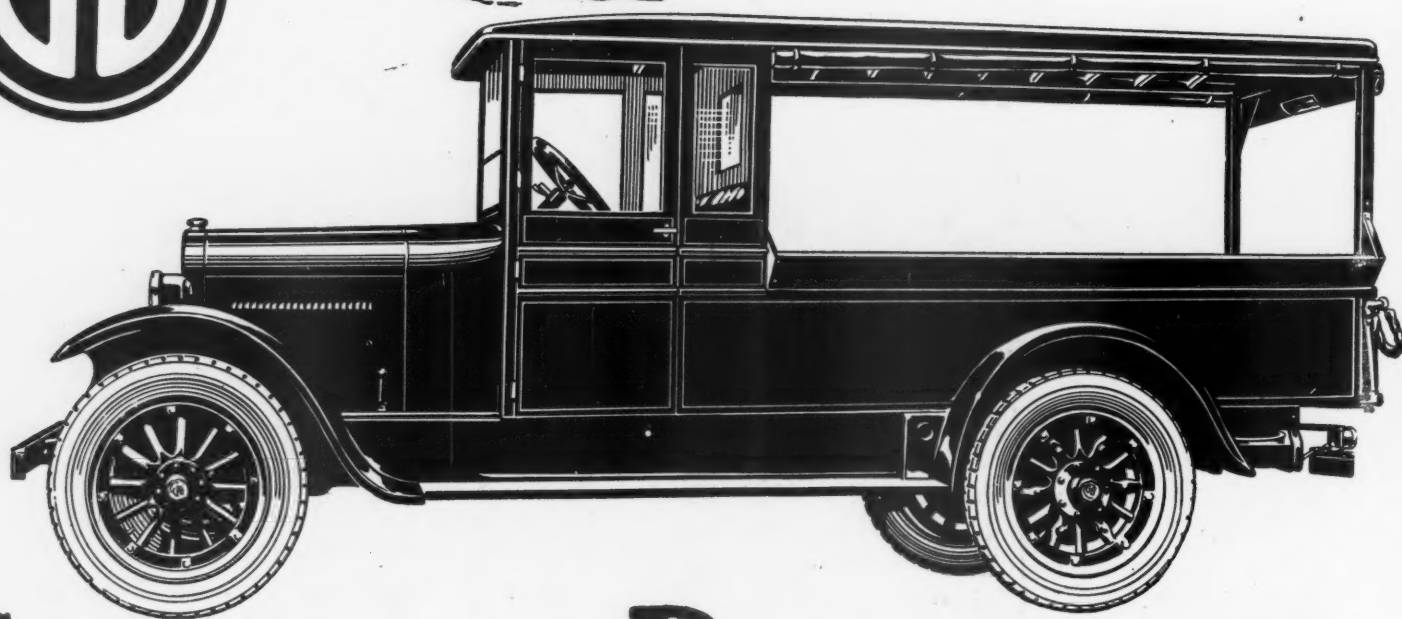
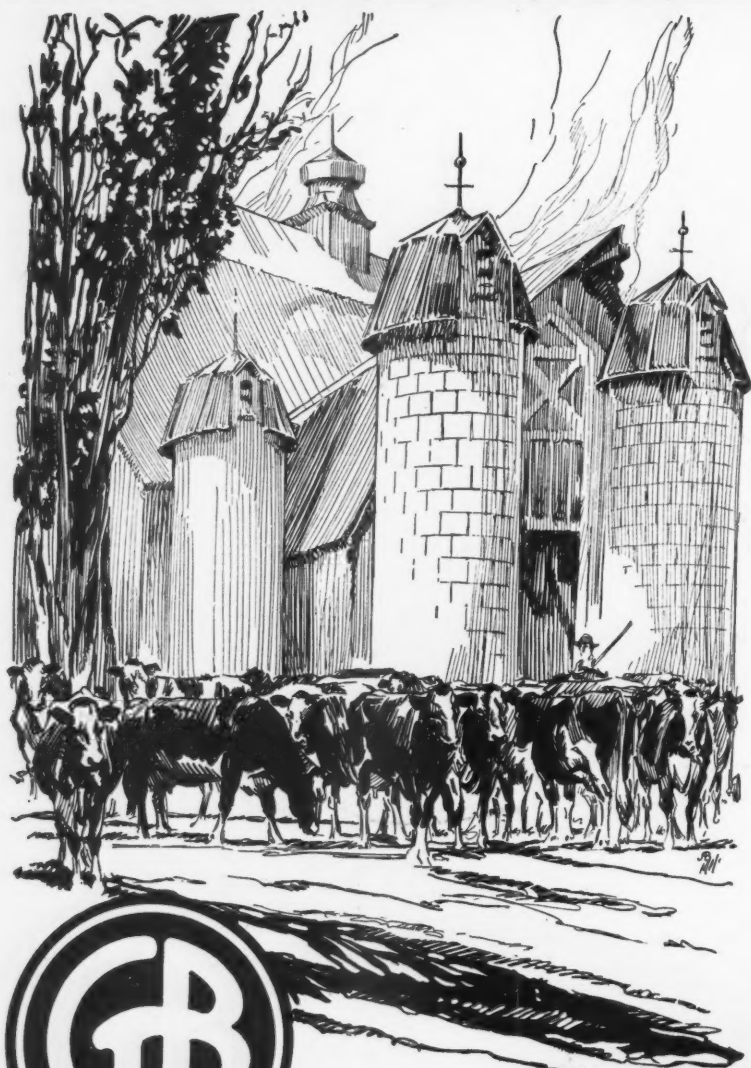
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